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EVOLUTION OF GYNECOLOGY*

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Gynecology, defined as a study of diseases of woman, is, as its name implies, a broad subject and includes in its scope an extensive field of operation. It is only natural that a period of years will show many progressive steps in the development of this specialty.

HISTORY

When one glances backward, he must naturally envy his predecessors for the many opportunities which lay before them, and at the same time, must also experience a feeling of sympathy for the great difficulties under which they were working. We are all familiar with some of the early adventures of gynecology, such as the daring and spectacular operation of Ephraim McDowell of Danville, Kentucky, who, in 1809, performed what is reported to be the earliest successful removal of an ovarian cyst, in America, and earned for himself the title of "Father of Ovariotomy." It must have taken a large amount of courage on the part of both the surgeon and the patient to attempt a major operation in those days. I could not wish to describe in any better way this history-making operation, which has contributed so much to American surgery, than to quote from a recent address by our advisor and friend, Dr. Rudolph Matas, who said, "Though the disease for which the operation was performed only occurs in women, it necessitated the deliberate opening of the abdomen, up to that time regarded as a forbidden precinct of the human body, which none dared enter without peril or impunity. But this successful performance in the case of Jane Todd Crawford, in defiance of traditional and well-founded years, was the first signal given to surgery that the prohibitive ban of the ages had been annulled, that the victims of this and other fatal abdominal diseases would benefit in the future, and thereby a new path in surgery had been blazed and made open to unknown and hitherto unthought of possibilities."

The operation was performed in a small farmhouse on Christmas Day, 1809, at which time a large ovarian tumor weighing over twenty-two and a half pounds was removed. It is said that five days later when Dr. McDowell came to see his patient, he found her up and about, making her bed. In three weeks she returned as she came, by horseback, over the 60 miles trail to her cabin home. Her heroism is no less great than his, and it is natural to see why only recently members of the Kentucky State Medical Society dedicated a monument to Jane Todd Crawford, who may be justly named the "Mother of Ovariotomy."

SOUTHERN GYNECOLOGIC PIONEERS

Speaking of gynecologic pioneers, upon investigation, one will readily find that the southern portion of the United States contributed in no small way to the development of our specialty as it exists today.

On January 25, 1813, there was born in Lancaster, South Carolina, a child who was destined to become one of the greatest surgeons of the world, James Marion Sims. His introduction of the silver wire suture, the Sims position, the Sims speculum, and a new catheter for bladder drainage made the operation of vesico-vaginal fistula what it is today. This

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was one of his outstanding achievements. It was during 1845 that he first encountered the condition of vesico-vaginal fistula and, in line with the opinion of the day, pronounced it incurable. In those days, the obstetric forceps were not in general use. Obstetric knowledge was not on the high plane of perfection that it is today. Very often the baby's head became impacted and compressed the bladder against the pelvic bones for hours, resulting in an interference of circulation in the tissues to such an extent that a vesico-vaginal fistula resulted. These cases were very common and were not considered at that time to be curable. It was almost by accident that Sims discovered the importance of the so-called Sims position for the proper examination and treatment of these cases. From a simple pewter tablespoon purchased from a hardware store, he conceived the idea of the Sims speculum which is in use today. His use of spiral spring wire, which developed his idea of silver wire for suturing material instead of silk, and the S shaped self-retaining catheter were the final points in the evolvement of his successful treatment of vesico-vaginal fistula. He was also a pioneer in anterior wall surgery for cystocele and prolapse of uterus and numerous other notable achievements.

My remarks on this subject would fall far short of even approaching completion if I failed to mention our own pioneer, Ernest S. Lewis, former professor of gynecology and obstetrics, Tulane University of Louisiana. His record was an enviable one and his accomplishments many. Living as he did, in a period of development, his experiences were numerous. Many prominent gynecologists have developed from the experience received while working in the wards of our own Charity Hospital of the State of Louisiana, at New Orleans, and be they great or small, some portion of the teaching has originated directly or indirectly from our great leader, Ernest S. Lewis.

RECENT ADVANCES IN GYNECOLOGY

The discovery of anesthesia and the perfection of sterilization during the nineteenth century stimulated advancement in gynecology as it did in surgery in general, but little was known regarding the finer points in gynecologic diagnosis or medical treatment. Almost everything done was in the operative field. Various types of operations were devised, and a high degree of perfection was obtained. It was not until the early part of the twentieth century that more thought was given to the improvement in methods of diagnosis and medical treatment. Present day conservatism was just beginning to be practiced. I well remember my earliest introduction into medicine. As students, we were taught some gynecologic diagnoses, very little, if any, medical gynecology, but we were permitted to witness a large number of spectacular gynecologic operations. I am frank to say my primary impressions of gynecology naturally were radical. Uterine cavities were curetted unmercifully and in a large number of cases fallopian tubes and ovaries were sacrificed, causing the onlooker to wonder if they really had a function at all. I am not making this statement in a form of criticism, since no one could question or deny the ability of gynecologists in those days. The point I wish to convey is that our specialty sult of this, conservatism in the history of of one of the greatest eras of advancement in diagnosis and medical treatment and, as a result of this, conservatism in the history of gynecology. Vesico-vaginal, recto-vaginal fistulas, and extensive perineal lacerations were most common at that time. Various splendid operations had been devised for the cure of these conditions, but the use of non-absorbable suturing material such as silver wire, silkworm gut and silk was responsible for a fair percentage of failures. Due to the ever increasing progress of obstetrics, vesico-vaginal and recto-vaginal fistulas are comparatively rare now. Then too, the successful immediate repair of perineal lacerations with absorbable suturing material has diminished considerably the need for extensive secondary repairs.

Probably one of the greatest progressive steps toward the successful practice of gynecology was the collaboration, one might say, between the gynecologist on the one hand and the pathologist, radiologist, and biochemist on the other. Various improved and accurate methods of laboratory diagnoses were accomplished. A more comprehensive knowledge of

the histology, pathology, and functions of the uterus, tubes, and ovaries was obtained by the gynecologist, and as a result a more conservative attitude toward these organs was developed with the one thought in mind, to do the greatest amount of good with the least amount of destruction or interference of normal function. I do not know of any condition in which this idea of conservatism is more amplified than in salpingitis. It was practiced in these cases long before it was in most other gynecologic patients, and I do not believe that in the comparatively recent past improvement in the treatment of these conditions has progressed materially. Of course, advanced laboratory technic has assisted in telling us when and on what type of cases to operate, but the "watchful waiting policy" is still our slogan. It has been many years since the gynecologist has been bold and ignorant enough to explore an inflamed pelvis and I am sure our idea of conservatism in this group of cases today has further taught us to leave such alone and at rest as long as it is humanly possible, with the reward of a complete cure in a large percentage of cases. When surgery does become necessary, it should naturally be radical because partial removal of diseased organs usually means subsequent operations.

UTERINE DISPLACEMENTS

Much could be said on this subject. One only has to read the average old edition of any gynecologic textbook and he will soon realize how important the gynecologists of the past regarded the question of uterine displacements. Fifty or more various types of uterine suspensions or fixations were devised. Many of them are obsolete now. We were told that displaced uteri could cause anything from headaches and backaches to sterility or abortions. I am quite convinced that it was not the newer types of suspension operations which were needed, but more correct methods of diagnosis. One or two of the many forms of uterine suspension operations would have been sufficient for the absolutely necessary operative displacement cases. Gynecologic progress has taught us that in a large percentage of cases the symptoms usually attributed to uterine displacements are in reality caused from other conditions, namely, constipation, focal infection, sacro-iliac, or arthritic conditions. I am frank to say a large number of my so-called uterine displacement cases are cured by proper orthopedic measures. I do, however, admit that there are a few that need suspension, but these few should be carefully selected before subjecting them to unnecessary operative procedures. Pessaries are still of service, but mostly as a palliative measure. Modern obstetric care has diminished to a large degree the number of uterine displacements, as it is well known a fair number of them are of puerperal origin and, to quote the words of a prominent obstetrician, "The habit of lying on the back is the most unnatural posture to which the human race has become heir, through habit only. No other animal sleeps in such a position and certainly no other female would dream of abusing herself following labor. But our female almost invariably does, and the heavy soft uterus with the usual means of support, the pelvic floor newly stretched, weakened, even injured, has really no alternative but to gradually tumble back against the sacrum with a resultant uterine displacement."

LEUKORRHEA

One of the most annoying symptoms of a disease which many women suffer and seek relief from is leukorrhea. This condition, in the earlier days of gynecology, was the excuse for the much abused operation of curettage. As we all well know now, the results were disappointing because, in most instances, the uterine cavity was not the source of the trouble. Later our point of attack was the cervix uteri. Various kinds of mutilating operations were devised for cervical disease. After a while, we arrived at the conclusion that cervical cysts, erosions, and eversions which apparently do cause leukorrhea could be treated by better methods than extensive surgery. We are probably most indebted for our present day treatment of cervical conditions to Guy L. Hunner, of Baltimore, who, in 1906, described his method of cauterization of the cervix by deep radial incisions. Hunner's theory was that by using the actual cautery, as he did, in deep radial strokes, the cervical glands with surrounding inflammatory areas would be destroyed and

that enough healthy stroma would be left between the cautery strokes to insure against future stenosis and dystocia at labor. The paquelin cautery was first used, and, later, thermo cauteries. In my own work, I have found the cautery of great service in the treatment of cystic cervicitis, cervical eversions and erosions. Early postpartum use of the cautery is advised on the ground of prophylaxis, and the fact that the treatment is an office procedure carried out with no discomfort or inconvenience to the patient makes it more practical. I am frank to say that my percentage of extensive surgical repair of the cervix has diminished, in the past few years, to an almost negligible degree.

In spite of the progress in the treatment of cervical diseases, a certain percentage of persistent leukorrhea cases were not relieved. Various antiseptic douches were used with no avail, and even though the Trichomonas vaginalis had been described by Donné as far back as 1836, it has only been in recent years that the disease, so easily diagnosed, has been properly treated with any number of the various preparations now suggested and, as a result, a large percentage of chronic leukorrhea cases have been cured. I can assure you that you will not find a more grateful patient than the woman who is cured of a persistent and annoying leukorrhea.

ROENTGEN RAY AND RADIUM AS AN AID TO GYNECOLOGY

The development of roentgen ray as a means of diagnosis and as a therapeutic agent, and the advent of radium, have contributed in no small way to the progress which the specialty of gynecology has attained. The question of gynecologic diagnosis was first considered. The growing conviction that there must be some dependable way of diagnosing obscure conditions within the female pelvis without having recourse to exploratory laparotomy led to exhaustive experimentation, with a view of finding such a measure. To Kelling, of Dresden, belongs the credit of having first suggested, in 1902, that conditions in the peritoneal cavity might be diagnosed by inflating the cavity with air or gas. In June, 1919, Steward and Stein introduced in America the combined method of diagnostic gas inflation of the peritoneum and roentgen transillumination of the abdominal cavity. Later, in 1919, Rubin conceived the idea of inflating the peritoneal cavity by insufflation through the fallopian tubes with a view to determine their patency or blockade. This was followed by various other methods and, finally, in 1924, the first use of lipiodol for uterosalpingography was reported, and, as a result, new avenues of gynecologic diagnosis were opened.

The roentgen ray has contributed in many other ways to diagnostic measures, such as in cases of ovarian cysts, dermoids, and certain forms of uterine fibroids. As a therapeutic measure, both roentgen ray and radium are most necessary in gynecologic armamentarium. Besides the employment of radium in uterine cancer, I do not know of any condition which responds more readily to its use than cases of functional uterine hemorrhage in women nearing the menopause, associated with, or without, hyperplasia of the endometrium and fibrosis of the uterus. These are the cases that years ago would have been subjected to curettage once, twice, or several times and, finally, in desperation, after all measures failed, hysterectomy would have been resorted to in a patient already weakened by prolonged uterine hemorrhage with the usual dangers associated with this type of operation. I strongly advocate diagnostic curettage in these cases as a preliminary to the radium treatment.

Of recent date, a great deal of interest has been manifested in the irradiation of the pituitary gland in the treatment of menopausal symptoms of patients who have not been benefited by the usual forms of medication. Recent reports, including several hundred cases so treated, show very gratifying results. This form of treatment is not new, but it is one that has been revised and made popular since there is now a better understanding of the relation of the pituitary gland and certain of the female organs, and also of the effect of irradiation therapy on these organs. C. G. Collins, E. Perry Thomas, and Leon J. Menville reported, at the Detroit meeting of the Radiological Society of North America, cases of 33 such patients wherein irradiation therapy was used. Only one patient, with surgical menopause of 13 years' duration, failed to im-

prove. Improvement is most often noticed during the third week of treatment. Complete relief is obtained three weeks after the last of the roentgen ray exposures.

TUMORS OF THE UTERUS

I feel we have made definite progress in the treatment of new growths of the uterus; particularly is this true in the benign group. In the early days of gynecology, these were treated more or less as a general class, large fibroids of the uterus being most common. Today, as a rule, we see the smaller type because the fear of operation does not exist as it did years ago, and patients seek relief sooner. With the perfection and cooperation of the pathologic laboratories, we have been able to study and classify fibroids of the uterus in a more intelligent manner, and, as a result, they are placed in certain groups and treated accordingly.

Group I. Subserous or Subperitoneal Myomas. Especially in young subjects, these are usually treated by myomectomy and, as a result, the functions of the uterus are maintained. Many cases of pregnancy and successful delivery are reported following myomectomy in young women. I recently had an opportunity of doing a moderately large myomectomy in a patient associated with pregnancy, and a few months afterwards delivered her of twins.

Group 2. Intramural or Interstitial Myomas. The tumors which occupy the muscular structure of the uterus may be treated by intrauterine radium treatment and subsequent roentgen ray therapy or operative procedure. In the extensive growths, where the tumor is larger than a three months' pregnant uterus or in multiple growths, I prefer hysterectomy, a supra-vaginal or incomplete hysterectomy being, as a rule, the choice operation. The complete hysterectomy is done when the cervix uteri presents evidence of extensive scar or if there is evidence of malignant disease in either the cervix or body of the uterus. In the smaller single tumor of the uterus, occurring in an elderly woman, or in cases at or near the menopause, and when the tumor is no larger than a three months' pregnant uterus, radium may be used followed, if necessary, by roentgen ray therapy. In these cases, a preliminary diagnostic curettage is always indicated.

Group 3. Submucous Tumors or Polyps. Most of these growths may be removed by the cervical route. If the polyp is pedunculated, removal with a cautery is usually done, followed by a thorough curettement of the uterine cavity, always keeping in mind that a small percentage of the growths are malignant.

Rather perplexing problems in gynecology are cases of degenerating myomas. These are the ones that are frequently referred to as "soft fibroids." They are interesting from the standpoint of diagnosis, frequently being confused with pregnancy. I well remember many cases in which, even after the abdomen had been opened, the soft symmetrical enlargement and congested appearance of the uterus made one hesitate for fear of removing a pregnant uterus. The Friedman modification of the Aschheim-Zondek and other pregnancy tests has, to a large measure, removed this difficulty by clarifying the diagnosis before operation—another advancement in modern gynecology.

MALIGNANT TUMORS OF THE UTERUS

The twentieth century sees the cancer problem still unsolved, but I am sure we must admit that marked progress has been made and the facts remain that cancer of the uterus is curable, as shown by statistics from clinics in this country and Europe, reporting 10 to 15 year cures of cancer of the uterus following the use of radium or surgery. We have passed through many years of changing treatment, from chemical pastes such as zinc chloride, and heat cauterization to the various forms of operative treatment, such as vaginal and abdominal hysterectomy including the so-called Wertheim radical operation.

Shortly after the discovery of roentgen rays by Roentgen, in 1895, and the discovery of radium a few years later by Madame Curie, an interest was manifested in the use of these agencies in the treatment of cancer. At first, the results were very unsatisfactory, due to the lack of knowledge regarding the use of them, but with improvement in technic and a better understanding of their biologic effect, more and more use was made, until, at the present

time, they are considered indispensable in the treatment of carcinoma of the cervix.

Radium, roentgen ray, and surgery seem to be a more or less universal form of treatment for uterine cancer now. The location, duration, extent of invasion, and type of disease are the determining factors. Although there is some difference of opinion concerning the treatment of carcinoma of the cervix, I think most of us agree that, in carcinoma of the body of the uterus, the most satisfactory form of treatment is surgery, which consists of complete hysterectomy and, in the majority of early cases, the results are good. Regarding the cervix cases, radium seems to be the choice treatment in the majority of patients. I think it is generally conceded that in carcinoma of the cervix about 97 per cent are of epidermoid or squamous cell variety and the remaining 3 per cent of the adenocarcinoma type. The majority of the former group should be treated by radium. The adenocarcinoma type, if early, and if the patient is a good risk, should be treated by extensive hysterectomy. In advanced cases, radium with roentgen ray may be used. Roentgen ray seems valuable in those patients who have pain due to pelvic disease.

EXPERIENCES ELSEWHERE

Interesting reports are available in the medical literature regarding the use of roentgen rays and radium by physicians in this and other countries. While there may be a slight difference in the technic of application of both roentgen rays and radium, the results are strikingly similar. For instance, Heyman of Stockholm, Sweden, in the treatment of carcinoma of the cervix, uses a total amount of 6,880 milligram hours of radium and, after the application of the radium, he uses deep roentgen ray therapy. He reports 22.4 per cent of such cases are well five years after irradiation therapy. Now, Healy, of the Memorial Hospital, New York City, uses a total of 5,000 milligram hours, followed by roentgen ray therapy. He reports 1,574 cases so treated, 22 per cent of which were well five years after irradiation therapy. Kaplan, of Bellevue Hospital, New York City, uses 6,500 milligram hours, followed by roentgen ray therapy, obtaining practically the same result as Heyman. Schmitz of Loyola University of Chicago, uses 4,800 milligram hours, followed by roentgen ray therapy, with the report that 28 per cent of the cases treated had good results five years after the use of irradiation therapy. Bowing, of the Mayo Clinic, of Rochester, Minn., uses 5,400 milligram hours, followed by roentgen ray therapy, with 75 per cent of the early cases well after five years, 63 per cent of the intermediate, and 21 per cent of the advanced cases. Regaud, of Paris, of the Curie Institute, reports 317 cases treated by irradiation therapy, with 33 per cent well after five years. Burnam, of Johns Hopkins, Baltimore, reports 349 cases, with 20 per cent well after five years. Barnes Hospital, St. Louis, reports 121 cases, with 23 per cent well after five years. Crossen, from St. Louis, reports 21 per cent of his cases well after five years.

It is of interest to note that the favorable reports being obtained at the present time at the larger medical centers of this and other countries are very similar, and it is also interesting to observe the similarity in technic, which may explain the favorable results obtained. It is to be appreciated, of course, that this form of treatment as reported here is not to be thought an empirical one, but that each and every case is an individual and should be treated accordingly. The statistical report herein presented merely shows an average of a group of patients treated by these individuals.

PREVENTION OF CANCER

The prophylaxis of cancer of the uterus still remains an all important question today. If we will continue to educate the women of this country to the very important significance of abnormal white or bloody vaginal discharges, irregular or prolonged menstrual bleeding, a return of menstrual bleeding after the supposed menopause and, at the same time, examine carefully all patients complaining of an irregularity, treating post-delivery and other cervical erosions or scars, and resorting to diagnostic curettage or biopsy in all suspicious cases, I am sure our percentage of uterine cancer cases will be diminished. Those presenting themselves for treatment will be seen earlier and, as a result, the number of cures will be increased. Just what the future will de-

vise for the further treatment of cancer remains to be seen. Probably, subsequent investigations and discoveries in endocrinology and organotherapy will throw more light on the subject. Much progress has been accomplished in the past few years concerning our knowledge of female endocrinology and, as a result of this, organotherapy has been placed on a more or less scientific basis. In the earlier use of various glandular extracts, cases were treated empirically, to a greater or lesser extent, believing that most ovarian extracts were "cure alls." This was soon found not to be true. Later, the isolation of the various hormones led to the production of the numerous commercial products on the market today, and the careful analysis of the particular secretion, which is deficient in the individual patient, with the replacement, so to speak, of one of the commercial products containing as near as possible the hormone which is deficient, will often give the results desired. In my own experience, I have noticed good results in functional uterine bleeding in young individuals. It is fairly well conceded that the ovarian dysfunction in these cases consists of a failure of ovulation with abnormal persistence of estrin stimulation and absence of progesterone effect due to the fact that corpora lutea are not formed. The use of various preparations containing lutenizing hormones is of service. In vasomotor menopausal disturbances, it is thought that the withdrawal of estrin is an important factor in causing the climacteric symptoms and the administration of one of the various estrogenic preparations such as theelin will lessen the discomfort.

CONCLUSION

Permit me to say that I well realize my inability to discuss, at this time, anything more than an abstract of some of the many steps in the development of gynecology. I am sure, however, we must all admit that the progress has been most noticeable. The past was clouded with difficulties, the future seems very encouraging.

DISCUSSION

Dr. Courtland P. Gray (Monroe): The evolution of gynecology has not taken place by just chance nor just happened so, but has been due to such men as mentioned by Dr. Phillips.

To the early pioneering work of Marion Sims and Ephraim McDowell, gynecology today woes much. The literature pertaining to the work of both these men is most interesting. I would suggest, especially to the younger men, to read and study the life of Marion Sims. Equally as interesting is Haggard's tribute to Ephraim McDowell, "The Surgeon of the Wilderness." This is indeed a classic.

The tribute paid by Dr. Phillips to the late Dr. Ernest Lewis is most commendable. The teaching of Dr. Lewis has contributed greatly to the "Evolution of Gynecology", not only in Louisiana but in the entire South.

Another illustration of the progress made in the field of gynecology is to be found in the present routine office treatment for the various vaginal discharges and the so-called endocervicitis. It has not been many years since the use of the old ichthyol vaginal tempon was the routine procedure in all these cases. Today the proper diagnosis of these conditions has altogether changed the plan of treatment.

I thoroughly agree with Dr. Phillips that endocinology has changed the entire viewpoint in many gynecologic cases. Even now we do not know just where endocrinology will finally lead us, but we do know it has cleared up many gynecologic problems which were not understandable a few years ago.

Dr. Phillips mentioned uterine displacements. As an illustration of the advancement and evolution in gynecology, permit me to mention what we were taught in my student days as some of the most prominent symptons of uterine displacement. We were told that pain on top of a woman's head signified a backward uterine displacement. Many of the ills of womankind were attributed to uterine displacement. There was not so much stress put on the old lacerated perineum, which was probably the cause of what displacement there might have been.

Then too, I recall that deadly instrument the curette. What a weapon to place in the hand of a young graduate in medicine. Today we leave this for the exceptional case and dare not invade the uterine cavity because the woman is flowing too freely as a result of some endocrine dysfunction. We almost tremble when we look back at the long line of nervous women, who have been made so as a result of premature and indiscriminate surgery which had little respect for the ovaries and tubes.

I believe that the paper just presented by Dr. Phillips is one of the most important that will be presented at this meeting. It will do us all good if we will read and study this paper by Dr. Phillips after it is published in our official journal.

All in all, I believe that the sum total of evolution in gynecology may be given in a few words: Diagnosis, endocrinology, and conservatism. Careful consideration of these three factors will lead us far.

Dr. T. B. Sellers (New Orleans): I agree with everything Dr. Phillips has said and my remarks will be confined to elaborating on a few points which time did not permit him to dwell upon.

It cannot be emphasized too strongly that pelvic inflammatory disease should be classified and treated medically in order that later surgery may be as conservative as possible. The patient should be given detailed instructions as to what constitutes adequate rest; it is important that she also be under the constant care of the gynecologist during this period. Heat applied to the vault of the vagina by means of the Elliott treatment regulator, supplemented by injections of sterile milk every third or fourth day, is of definite value in a large percentage of these cases.

Retrodisplacements of the uterus should be adequately treated and corrected as early as possible. The pessary has a three-fold value: first, its early use for retroversion following miscarriage or delivery corrects from seventy-five to eighty per cent of these cases; second, it is an excellent diagnostic agent in backache with retroversion as the simple procedure of replacing the uterus and applying a properly fitting pessary will often clarify the diagnosis; third, it is of value in poor surgical risks either temporarily or as a permanent measure in retroversion and procidentia. If it is necessary to resort to surgery in the treatment of retroversion, major attention should be given to the existing pathology. The pelvic floor should be repaired anatomically and the utero-sacral and broad ligaments shortened; in extreme cases of retroversion with procidentia, the method of Curtis is of value, namely, advancing the bladder fold on the anterior wall of the uterus.

Endocervicitis is a common cause of certain types of leukorrhea though by no means the only one. Particular attention should be given to the adequate treatment of endocervicitis. Erosion or eversion is usually a superficial involvement of the external os only, due either to chemical irritation or to some form of injury to the cervix; in endocervicitis, most of the glands in the cervix are involved, with the infection extending up to the internal os. Complete eradication of the infected glands is essential. For this purpose we have found the electrosurgical unit the most desirable agent; if it is not available, the cautery method is the next procedure of choice. Complete eradication not only removes a focus of infection, but also constitutes definite prophylaxis against the later development of carcinoma of the cervix.

In a small group of badly involved cervices, it is necessary to resort to the Sturmdorf amputation.

In all cases in which there is any question as to the presence of carcinoma, a biopsy should be taken before cauterization or conization of the cervix. Much damage can be done through opening up the lymphatics and permitting an existing cancer to be disseminated. Early biopsy also eliminates possible loss of time in giving adequate treatment promptly, should carcinoma prove to be present.

Isolation of the several hormones has marked a definite advance in gynecology. As a diagnostic agent, the Aschheim-Zondek test is of great value in the determination of early pregnancy and of the presence of certain pathological lesions, such as hydatiform mole, chorio-epithelioma and teratoma. Therapeutically, the follicular hormone, theelin, has proved to be of value in treating menopausal symptoms and antuitrin-S has been used advantageously in metrorrhagia.

A word of warning against the indiscriminate use of roentgen ray and radium: As valuable as these agents are in menopausal bleeding, fibroids and cancer when indicated, much harm has been done by the inexperienced man using them indiscriminately.

Dr. C. H. Mosely (Monroe): I want to talk rather briefly about radium and call attention to the neglect of surgery.

It takes 30 minutes to do a vaginal hysterectomy. We used to hear Dr. Frank Smythe say that in the hands of a competent surgeon the mortality is practically nil, in the hands of a tinker the mortality is 100 per cent. That holds true. I cannot remember of ever having had any trouble with vaginal hysterectomy. We do it on these old ladies in about 20 or 30 minutes; do it with the clamp method. I believe ether is the safest anesthetic. I have never seen anybody have any trouble with it. It should be given by the drip method, and not one patient in 10 to whom I have given this anesthetic suffers from vomiting.

What we want to do is to rehabilitate these old people and get them well without submitting them to an intra-abdominal operation, and I have had a 100 per cent cure.

Dr. Leon J. Menville (New Orleans): The orderly manner in which Dr. Phillips arranged his talk is striking, because doctors, as a rule, are so occupied with their numerous responsibilities in the practice of medicine that they often do not have the inclination nor the time to arrange their manuscripts in a manner which will give an editor the least amount of trouble.

Dr. Phillips has wisely stressed the importance of consultations between the radiologists, pathologists, and gynecologists. In this manner, infor-

mation may be obtained which will be of great value to the gynecologic patient. In regard to the use of radiation therapy to the pituitary gland in women at or near the menopause who have failed to respond to the usual form of medication, it is a form of treatment which is now being generally employed for such conditions. It has been my privilege, in collaboration with Dr. Conrad Collins and Dr. Perry Thomas at the Tulane Clinic, to have treated a large number of such patients. We have at different times published the reports of the good results obtained by this form of treatment. I quite agree that radium is used in instances too empirically by inexperienced physicians, but in the hands of the experienced radiologist, I know of no argument against its use.

PELVIC CONDITIONS SIMULATING APPENDICITIS*

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The well known dictum "appendicitis against the field" has been extensively used, but not always judiciously. It should not be applied until reasonable effort has been expended in an attempt to establish an accurate diagnosis. Ardent adherents of this dogmatic saying gradually accumulate an increasing number of instances in which appendectomy has been performed without relief of symptoms. A list of these diagnostic errors would include a wide variety of conditions whose cause may be systemic, for example, measles and scarlet fever; cardio-respiratory, for example, pneumonia, pleurisy or coronary occlusion; upper abdominal, for example, cholecystitis or perforated duodenal ulcer; local, for example, ileo-cecal tuberculosis, typhoid or ureteritis and finally, pelvic lesions.

A number of pelvic lesions which have been confused with appendicitis will be enumerated and briefly considered. Only the salient features will be mentioned. Attention will be directed to the possible sources of error of omission rather than a lengthy differential diagnosis.

GONORRHEAL INFECTIONS

Gonorrheal infection undoubtedly takes first rank. Tracing the course of a typical case, the first manifestation of the disease is at the level of the glands of the urethra and vaginal introitus. The infection progresses upward through the vagina to the cervix, where it may assume an extended residence. The involvement of the endometrium is transitory while the uterine tubes are very susceptible to the infection. Before the fimbriated ends of the tubes are closed, infected material escapes into the pelvic cavity and spreads to the adjacent pelvic organs, particularly the peritoneum. Thence it may spread upwards along the flanks as far as the diaphragm. Special attention may be directed to the involvement of the peritoneum at or near the level of the appendix. If a patient is seen for the first time when the peritoneum near the appendix is involved, the diagnosis may be exceedingly difficult, particularly when the preceding lesions have been mild and transitory. Associated nausea, vomiting, constipation, fever, leukocytosis, localized pain and tenderness may closely simulate appendicitis. In such an instance, the preceding history bears the utmost importance. This may be suppressed by the patient wilfully or inadvertently. Repeated observations of the complete progress of the infection from its onset in Skene's glands, thence upwards along the reproductive tract and along the peritoneum, provides a sound basis for the interpretation of the lesions localized near the appendix. When the tubes are closed early and the infection confined to the reproductive tract, the diagnosis is usually not difficult. There is one exception, however, in an acute exacerbation of a latent tubo-ovarian infection persisting long after the symptoms in the lower tract have disappeared and are possibly forgotten.

UNRUPTURED ECTOPIC PREGNANCY

Unruptured ectopic pregnancy may be exceedingly difficult to diagnose. When rupture occurs and blood escapes into the pelvic cavity, the diagnostic problem is simpler, although the treatment may be more difficult. Shock and other signs of sudden hemorrhage are not likely to be mistaken for appendicitis. Tubal abortion presents less conspicuous symptoms. At times, the symptoms are so insignificant that the woman does not even consult a physician. Knowledge that the event has occurred is first gained when the disintegrating products of con-

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*Read before the Louisiana State Medical Society, Monrce, April 27, 1937.

ception are accidentally discovered at operation. Many pass unnoticed and are not recorded. Repeated small hemorrhages from the tubes, however, may give rise to recurring attacks of pain which strongly suggest appendicitis. The peritoneum in the region of the appendix is irritated, pain and tenderness below McBurney's point are noted. Slight pain and leukocytosis may occur and digestive disturbances are the rule. An accurate history will usually show some recent menstrual irregularity accompanied by the passage of a small amount of blood from the vagina. A pelvic puncture may demonstrate the presence of blood in the cul-de-sac. Accurate location of the pain and tenderness places the maximum below McBurney's point.

ENDOMETRIOSIS

Endometriosis is a general term which signifies the aberrant growth of tissue like the endometrium. The structures involved are largely confined to the pelvic cavity. Other locations are not important in relation to appendicitis. Many of the lesions are silent and symptomless, being discovered accidentally at operation. Although endometriosis of the appendix and cecum occasionally occurs, I have never seen such lesions associated with symptoms that suggested appendicitis. Endometriosis of the right ovary or tube and peritoneum near the appendix has been diagnosed as appendicitis. The aberrant endometrial tissue responds to the cyclic stimuli of the ovarian hormones resulting in alternating periods of growth and regression, just as does the normal endometrium. Some of the lesions are characterized by endometrial lined cysts which periodically bleed into the cavity of the cyst. The resulting distension may affect the sensitive parietal peritoneum causing localized pain and tenderness. Furthermore, the bleeding is not always confined to the cysts, but breaks forth, spreading to the surrounding peritoneum which it irritates, thereby producing pain and tenderness. Fever and leukocytosis are usually absent. Digestive disturbances, if present, are not characteristic. The predominantly confusing symptom is the localized pain and tenderness. The cyclic nature of these is conspicuous, and is an important diagnostic point. Furthermore, careful location of the bowel, appendix, cecum or sigmoid are not associated with pain, because only the visceral peritoneum is involved which is not highly sensitive. Even extensive lesions when confined to the visceral peritoneum do not give rise to pain or tenderness.

MISCELLANEOUS DISORDERS

Torsion of the ovary, tubes, ovarian or parovarian cysts or solid tumor has been mistaken for appendicitis. Epigastric distress, nausea, vomiting, constipation, fever, leukocytosis, localized pain and tenderness may closely simulate the symptoms attributed to appendicitis. The onset is insidious; the progress is gradual; the symptoms are only moderately severe but are persistent without regression. The history is usually not enlightening. The distinguishing features are the gradual onset and the localization of pain and tenderness. The area of pain and tenderness may be extensive, but careful examination will fix the maximum below McBurney's point. Either condition requires operation, and therefore there is no need to wait if in doubt.

A physiologic condition which was demonstrated to me as a medical student may be mentioned. Certain thin individuals, and those with relaxed abdominal walls, present a normal tenderness when the abdomen is palpated over the iliac blood vessels. When this tenderness is elicited only at McBurney's point, it has been mistaken for a tender appendix. Correct interpretation may be obtained by comparison with the reaction to palpation over the blood vessels on the left side of the abdomen.

URETERAL STRICTURE

Stricture of the ureter, especially when associated with pyelitis and ureteritis, may cause pain and tenderness at McBurney's point. Although all clinicians are not willing to accept stricture of the ureter as an entity, the demonstration of an obstruction to the passage of a catheter and relief of symptoms following dilatation are impressive, if not conclusive. In addition to the pain and tenderness, all the other symptoms characteristic of appendicitis may be present. Careful history may elicit other symptoms referable to the urinary tract. When an inflamed appendix lies directly over the ureter and the inflammatory process extends to the ureter, the differential diagnosis may be difficult. It is usually the so-called chronic appen-

dicitis which must be distinguished from ureteral stricture. One patient, on whom I assisted at her twenty-sixth operation 25 years ago, has not ceased to impress me. On an erroneous diagnosis, a normal appendix had been removed. Subsequently she had adhesions, intestinal obstruction and hernia. She had wandered from doctor to doctor. Operation followed operation, but her original symptoms persisted until finally her right ureter was dilated. The possibility of a ureteral stricture should be borne in mind, and if there is the slightest doubt, a ureteral catheter will clear the diagnosis.

PERITONEAL CARCINOMA

An unusual condition which could not be diagnosed before operation may be mentioned in passing. In two patients, persistent pain and tenderness in the region of the appendix was not accompanied by any other symptoms. At an exploratory operation a squamous cell carcinoma involving the peritoneum of the pelvic wall was the apparent origin of the symptoms. Careful exploration of the abdominal and pelvic cavity failed to reveal any other new growth, therefore, the carcinoma originating in the peritoneum was the obvious cause of the symptoms. The lesion was too extensive in each instance to permit complete removal. Autopsy on one of these patients showed no other squamous cell neoplasm in any part of the body. None of the preoperative findings were sufficiently characteristic to justify the diagnosis of carcinoma.

RUPTURE OF GRAAFIAN FOLLICLE

One simple condition of the ovaries has so frequently been mistaken for appendicitis that it demands particular attention, namely, rupture of the Graafian follicle. It is now generally accepted that ovulation or rupture of a follicle occurs approximately midway between menstruations. An average mature follicle measures 1 cm. in diameter and it contains considerable free fluid which escapes into the pelvic cavity at the time the ovum is extruded. Ordinarily the rupture point is plugged, and seals itself within a few hours. Occasionally, however, the seal breaks and blood escapes which irritates the pelvic peritoneum, giving rise to characteristic pain and tenderness. At times, the normal follicular fluid, not accompanied by any blood is sufficiently irritating to call the host's attention to the procedure, and the individual is aware of ovulation pain. Many records have been kept over a period of months. One patient furnished me with an accurate record of ovulation for two years. She was so thin that palpation of the ovaries was easy. Her statement that ovulation had occurred in the right or left ovary was readily confirmed by pelvic examination, when the ovary on the side corresponding to her pain was found to be enlarged, and the peritoneum was tender. The pain which lasted only a few minutes, was characterized as sharp but not cramp-like.

Following ovulation the corpus luteum develops and reaches maturity shortly before menstruation. During the latter days of development, hemorrhage may occur in the corpus luteum and occasionally breaks through the surface to the peritoneal cavity. This event is likewise accompanied by pain similar to ovulation pain. Tenderness, elevation of temperature and slight leukocytosis are associated with the pain. Serious hemorrhage may occur at this time. More than 100 such instances are now recorded in the literature. The symptoms, however, are characteristic of serious hemorrhage, and need not be confused with the mild symptoms of slight hemorrhage, nor is appendicitis simulated.

The symptoms of rupture of a follicle and mild hemorrhage from a corpus luteum are nearly identical, differing only in the time of the menstrual cycle at which they occur. The condition appears most frequently in young women. The onset is sudden. The temperature seldom rises above 100°F. The leukocyte count seldom exceeds 10,000 or 12,000. Pain and tenderness are referred to the lower quadrants of the abdomen. This may be followed, but not preceded by pain or tenderness in the upper abdomen. There may be anorexia, nausea and occasionally vomiting. Bimanual pelvic examination fixes the point of maximal tenderness near McBurney's point.

DIFFERENTIAL DIAGNOSIS

To differentiate the ovarian syndrome from appendicitis, it is essential to distinguish between the acute inflammatory and obstructive appendicitis. The onset of pain in acute obstructive appendicitis is usually sudden. It is usually first located in the umbilical or epigas-

tric region. Vomiting is a prominent and early symptom. The pain is usually intense for a considerable period which may be followed by a free interval. Rigidity and tenderness usually appear early. In general, the symptoms are milder than in the obstructive type.

The differentiation of the symptoms of obstructive appendicitis from irritating fluid coming from the follicle or corpus luteum is urgent on account of the rapid progress of appendicitis. The suddenness of onset is characteristic of both conditions, but with appendicitis the vomiting is more pronounced, the pain is more intense, the temperature is more elevated and the leukocytosis is greater. Observation for one or two hours will usually suffice to establish the trend. The inflammatory type cannot be distinguished so readily, because the onset is more insidious and the progress slower. For this reason, however, it is safe to observe the inflammatory type longer before the final decision is made.

The most important differential aid in diagnosis is the localization of maximal pain and tenderness. In appendicitis, it is usually located at McBurney's point, while ovarian pain and tenderness is below that point. Bimanual examination helps to fix the localization. The patient will often actually localize the lesion correctly, if asked to point with only one finger. This can be confirmed by the examiner, likewise searching with one finger for maximal tenderness.

Many patients have had a normal appendix removed, the operator reporting bloody fluid in the pelvis and the presence of a corpus luteum in the ovary. In subsequent cycles similar symptoms recur. In not a few instances, a patient has presented herself after appendectomy because she feels the same pain she had before the operation. History and examination indicate that the source is in the ovary. It is serious to overlook acute appendicitis. When in doubt, operation should be advised. No harm, however, can come from a brief period of observation to establish the trend. The more fulminating the symptoms, the quicker the diagnosis can be made. The milder the symptoms, the less will be the danger in waiting for a diagnosis. The treatment indicated for rupture of follicle, or slight hemorrhage from a corpus luteum, is rest and observation. If the possibility of this condition is borne in mind, a diagnosis will often be made with assurance, and many patients will be spared a needless operation.

EMOTIONAL FACTORS

The emotions are an important part of life. They are difficult to define. Their limits and interrelations are often vague. Scientific study of emotions and bodily changes that are associated with various emotional experiences mark a new era in medicine. Many symptoms of disease can be controlled by way of the emotions. The field is vast. It belongs to no one specialty, but offers a challenge to every physician. Psychic and emotional states are capable of producing a wide variety of physical symptoms. Fear may be selected as the most common emotional disturbance, causing symptoms which are most difficult to distinguish from appendicitis or pelvic disorder. Among these causes may be mentioned fear of pregnancy, cancer, appendicitis or other disease. Recently, a girl of 15 came to the office complaining of pain in the right lower quadrant associated with dysmenorrhea, nausea, vomiting and fever. On two previous occasions, she had similar symptoms which had led to a diagnosis of appendicitis. On careful inquiry, it was found that these attacks occurred at examination time. Formerly she had been an excellent student. During the past year, her grades were poor. Consequently, she and her family were worried. A thorough physical examination revealed no conspicuous defects, except an error of refraction. Her position in the school room emphasized the visual defect, thereby increasing the eye strain and unconsciously she missed important parts of demonstrations by the teacher. She was fitted with glasses by the ophthalmologist. When she returned to school, her whole attitude changed; her appetite improved, the physical discomforts were relieved and she returned to her former high standard of scholarship. Another somewhat similar experience came to a girl of 13, who had developed prematurely. Her breasts were large and prominent. Other children remarked unkindly about her appearance until she became so sensitive that she manufactured an excuse to stay away from school. The excuse was physical symptoms similar to the previous case. Her treat-

ment consisted solely of assurance that she was a normal individual.

SUMMARY

An attempt has been made to bring before you some of the conditions which have been mistaken for appendicitis. The enumeration may suggest possibilities to be considered, but a complete guide for differential diagnosis is not assumed, and could not be compressed into this short space.

DISCUSSION

Dr. Lucien A. Ledoux (New Orleans): I am sure you all feel as I do, that we have been privileged to hear this most interesting paper by Dr. Pratt. This comprehensive review encourages me to voice an opinion which I have often expressed in private, namely, that in cases of suspected appendicitis after puberty, whenever possible a consultation should be held with a gynecologist in all cases of borderline diagnosis. I feel that a critical study of many cases which have been operated on for appendicitis and have subsequently undergone another operation for the relief of the original disability will reveal that some unrecognized pelvic pathology had been the underlying factor from the beginning.

The facts, submitted by Dr. Pratt, should also serve to emphasize the value and necessity of a good and complete history; this will prove a great aid and point the way in a large percentage of our cases. A thorough physical examination, too often incompletely or hastily done, is necessary for a good working diagnosis.

I would like to add to the list just given to you, three other conditions which I consider quite common because I have frequently had to consider them. One is the acute pain above or to the right of the bladder complained of in cases of developing acute cystitis, long before the symptoms of pressure, frequency and burning are complained of and positive urinary findings recorded. Another is the acute pain sometimes noted in patients developing an acute intestinal toxemia at or about the time that the menstrual period is due. This pain is due to the effect of the toxemia upon the ovary and frequently suspension of the expected menstrual flow is noted. A third situation is the acute pain caused by involvement of the superficial inguinal or deep pelvic glands in the early development of a vulvitis, bartholinitis and cervicitis or other lesions of the external genitals.

That this picture can be confusing at times is evidenced by a case that I would like to present in abstract: A female, 14 years of age, was seen one evening complaining of generalized abdominal pain but she did not appear acutely ill. No diagnosis was made at that time, though she appeared to be suffering from an intestinal disturbance due to some food indiscretion. As she gave a history of a previous attack of pyelitis, the urine was examined the next morning and it contained 4+ pus. She had no symptoms of cystitis and no pain in the region of the kidneys. The next afternoon, she began to complain of burning and frequency and that night she had hematuria. With treatment, the acute phase immediately subsided and the next day I almost felt apologetic for visiting the patient, as she felt and looked so well. About three o'clock in the morning, the nurse on duty called me saying that the patient was complaining of a good deal of pain over the entire abdomen, had had a chill with a rise in temperature and considerable abdominal distension. I saw her about an hour later, she was considerably distended with rigidity and in profound shock. I immediately sent her to the hospital and after several hours succeeded in overcoming her shock to permit an exploratory operation, which revealed a gangrenous appendix; the cecum was in the pelvis and the appendix was attached by fibrinous exudate to the upper right border of the bladder. After a rather stormy convalescence, the patient made a complete recovery but the case made an impression on me that I will carry as long as I continue to practice medicine.

Now in regard to the question of operation in such cases. Of course, we feel that when there is a sufficient element of doubt and after careful study and the weighing of all the evidence, the patient should be given the benefit of the doubt and an exploratory operation performed, and I feel that we are all in agreement that the McBurney incision has no place in an exploratory operation on the female.

The paper so ably presented by the essayist has proved most interesting and I feel honored in being given the privilege of opening the discussion.

Dr. E. L. King (New Orleans): There are two points I wish to emphasize, regarding matters coming under my personal observation. One Dr. Pratt mentioned, and that is the adolescent with ovarian cyst. In my interne days, I saw that, three times in very young girls, 10, 11, 12 years of age; in each case a diagnosis of appendicitis had been made. A perfectly justifiable error, but worth mentioning. An occurrence that interested me, was the case of a prominent surgeon in New Orleans, who told me this incident concerning himself. A diagnosis of appendicitis had almost been made by himself and one of his assistants, and he happened to mention the case to Colonel Craig, of the Department of Tropical Medicine of Tulane University. Colonel Craig suggested it might be amebiasis, which

rather amazed this physician, but Colonel Craig kept worrying about getting the feces examined before taking the appendix out, and so he submitted a specimen to Colonel Craig and it was full of ameba. The patient was treated for amebiasis and still has his appendix. I might add this to the category listed by Dr. Pratt, especially since 10 per cent of the population of the United States has amebiasis.

Dr. O. C. Rigby (Shreveport): I would like to mention that in the central portion of Louisiana and Mississippi, we occasionally find an appendix infected with hookworm. I have never seen such a patient with an acute attack of appendicitis, but they are usually bothered with intestinal disturbances. After they have been given the treatment for hookworm, we find that they are not free from the disease some months later. It is often that these attacks simulate pelvic disease and, of course, will not be well of the hookworm infection until the appendix has been removed.

Dr. P. Graffagnino (New Orleans): I certainly enjoyed Dr. Pratt's paper, which was a most unusual presentation of this timely subject. There is only one point I wish to mention.

Dr. Pratt called attention to the value of bimanual examination in the differential diagnosis between appendicitis and salpingitis and its value cannot be underestimated. However, it has recently come to my attention that a great number of young children, ranging from 10 to 14 years of age, are submitted to a vaginal examination, in order to make this diagnosis. I do not know of any procedure more valueless and unnecessary than in these individuals. A rectal examination will give all the desired information, and whoever has been encouraging vaginal examination in these cases has done the children great injustice. No one is justified in doing a vaginal examination on a child of that age without an anesthetic.

Dr. Jean Paul Pratt (In conclusion): I wish to express my appreciation for these additions. May I ask Dr. King about one unusual situation occurring recently. One of my colleagues had a patient with symptoms somewhat like appendicitis; she was operated upon. He found a normal appendix and she recovered. He had another case the next week but did not operate; she had a ruptured appendix and died. Within the month, he had a third case, which was operated and the appendix found to be normal.

THE VALUE AND USE OF DIURETICS IN EDEMA, WITH SPECIAL REFERENCE TO THE MERCURIAL DIURETICS*

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Owing to limitation of time this discussion upon the value and use of diuretics in edema will be limited to the mercurial group. No attempt will be made to consider the voluminous literature upon this subject, but simply to describe my experiences and present a few illustrative cases.

Although much knowledge has been gained in recent years, there is still some conflict of opinion concerning the mode of action of many diuretics. Obviously, the main function of a diuretic drug is to increase the volume of urine. Furthermore, this naturally presupposes a certain amount of functioning renal tissue and fair circulatory integrity. It would be absurd to expect a diuretic to be effective in an acute nephritis, or in the case of a heavy metal poisoning. Most diuretics act upon the kidney in one of two ways, by increasing the glomerular filtrate (xanthine bases), or by diminishing the reabsorption of water in the tubules (the mercurials). There are probably extrarenal factors involved but these are not definitely known.

THE IMPORTANT MERCURIAL DIURETICS

The three mercurial diuretics to be considered are as follows:

1. Novasurol, merbaphen, 33 to 34 per cent of mercury U. S. P.

2. Salyrgan, mersalyl, 39.6 per cent of mercury. Salyrgan suppository, 0.4 gm. of mercury.

3. Mercupurin, 39.2 per cent of mercury, representing 3.5 per cent of bound theophylline to which is added 1.5 per cent free theophylline. Mercurin suppository, 0.5 gm., equivalent to about 0.2 gm. mercury, or approximately two and a half times the amount of mercury contained in the 2 c. c. ampule. Mercurin contains no purin.

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In order to demonstrate the action and modes of administration of these diuretics, cases of cardiac edema and ascites due to various causes were selected. In the cardiac cases, diuretics were employed only when digitalis and rest failed to eliminate the edema. It should be emphasized that thorough digitalization will in most instances free these patients of edema by increasing the volume of urine through improvement of the blood flow in the kidney, thus increasing the glomerular filtrate. This action may fail, however, after several attacks of congestive heart failure, and then diuretics are clearly indicated.

CASE REPORTS

Case 1. J. L., male, 60 years of age, a night watchman. Diagnosis: Arteriosclerotic heart disease, coronary occlusion, pulsus alternans, congestive heart failure. Admitted to Touro Infirmary, June 5, 1925, and died June 3, 1927. *Present Illness*: Had been feeling tired and weak for 5-6 weeks. Four days ago began to suffer with shortness of breath after exertion only, but constantly for two days. Some swelling of the feet recently. Orthopnea for past three nights. *Physical Examination*: Orthopneic and cyanotic. Slight edema of feet and ankles. Pulse 130, regular. Heart: Enlarged, sounds are distant at apex; pericardial rub near left border of sternum. Moist rales at both bases. Temperature 101° F. B. P. 135/95. Urine negative. P. S. P. 35 per cent in two hours. T. N. P. N., 49.8 mg. per 100 c. c. Wassermann negative. Blood picture shows moderate anemia. *Course*: Patient, under observation for a period of two years, was carried through five attacks of congestive failure and died during the sixth, June 1927. Admirable diuresis was produced by thorough digitalization and rest with a weight loss of 12½ pounds in six days on his second admission. On his third admission, decompensation was more marked and digitalis failed to clear up his edema. He was then given ammonium chloride and novasurol. The second dose of novasurol, 2 c. c. by vein, caused violent vomiting and purging which lasted several days. During subsequent admission, theocin was used with much success.

Comment: It would appear that this patient's life was prolonged by the use of diuretics, especially theocin in this instance. Novasurol, one of the first of the mercurial diuretics, produced moderate diuresis but almost precipitated his end by an acute toxic gastro-enteritis, and much of the weight loss during the following two days may be attributed to loss of fluid by vomiting and purging. Because of its toxicity novasurol is seldom prescribed at present, being displaced by the newer mercurials which are much less toxic.

Case 2. W. B., male, aged 29, a farmer. Diagnosis: Chronic glomerular nephritis, hypertensive cardiovascular disease, anasarca. Admitted to the Touro Infirmary February 9, 1936, discharged March 26, 1936. *Present Illness*: Patient began losing weight and strength eight months ago. Dyspneic on slight exertion for six months. Severe headaches and frequent attacks of nausea and vomiting for four months. Orthopnea for past few weeks with increasing general edema. *Physical Examination*: Orthopnea and anasarca. Pulse 110. B. P. 220/160. Heart markedly enlarged; gallop rhythm; pulsus alternans. Abdomen: Prominent, shifting dulness; liver much enlarged. Crepitant rales at both bases. Urinalysis: 1.009, albumin 2½ per cent, sugar 0, pus cells, R. B. C., many hyaline and granular casts. T. N. P. N., 70 mg. per 100 c. c. Uric acid 8 mg. per 100 c. c. P. S. P. 12 per cent in two hours. R. B. C., 2,940,000; hgb., 65 per cent. Wassermann negative. *Course*: Digitalization had little effect on this patient's edema or urinary output. Because of the irritability of his stomach, diuretics by mouth were out of the question, therefore, with considerable trepidation because of the evidence of renal damage, he was put upon salyrgan by vein. The dose was only 1 c. c. and never increased but he received 21 injections. He left the hospital on March 26, 1936, and went home where he died on April 5, 1936.

Comment: This case illustrates how the edema may be controlled to some extent in a case of extreme congestive failure with impaired kidney function and a high non-protein nitrogen. It required considerable courage to give salyrgan in the face of definite kidney impairment but no additional damage was noted to the kidneys and the T. N. P. N. rose only 4 points in the course of a month.

Case 3. L. M. C., female, 50 years of age. Diagnosis: Alcoholic hepatic cirrhosis. Admitted to Touro Infirmary July 2, 1934 and discharged July 18, 1934. *Present Illness*: Began to be jaundiced one or two weeks before admission, when her abdomen also began to swell. She had been an alcoholic for many years. *Physical Examination*: Patient jaundiced. Temperature 99-101° F. Chest negative. Abdomen: prominent; liver much enlarged; ascites. Weight 152 pounds. Moderate edema of legs. Icterus index 75. Urine negative except for bile, and R. B. C. *Course*: The patient showed some improvement following treatment with intravenous glucose and sodium phosphate by mouth, but the ascites still persisted. She was put on ammonium chloride, gr. 60 daily, and given salyrgan, 1 c. c. by vein with markedly good effect. She was then discharged and advised to continue the injections at home. When she returned to the city July 27, 1934, her weight had increased

to 155 pounds. Ascites was quite marked, eyes icteroid and edema of the feet and legs. There was an ulcer over the right cubital vein where she had received an injection of salyrgan by her home physician. She was given 1 c. c. of salyrgan by vein. The following day she had severe headache and fever ranging from 103 to 104° F. The next day the temperature dropped to 100° F. On July 31, 1934 there was no edema of feet, abdomen less distended and eyes less icteroid. She was given salyrgan 1 c. c. by vein. The following morning her temperature was almost 103° F., and the next day she was normal (no malaria). She received six more injections of salyrgan without any febrile reaction. Her weight remained at 150 pounds. The abdomen was soft and the sclera clear. She appeared much improved. She then left the city and died April 28, 1935.

Comment: This case illustrates the care necessary in injecting salyrgan intravenously as the spilling of only a few drops into the tissues may produce an ulcer. The febrile reactions following the second two injections are difficult to explain as such effects must be rare. It should further be borne in mind that this patient was cholemic and running moderate fever prior to the treatment so that the mercurial injections may not have been entirely responsible for the febrile paroxysms. This case demonstrates the value of salyrgan in moderate doses in the control of ascites not due to cardiac decompensation.

Case 4. L. D., female, 40 years of age. Diagnosis: Auricular fibrillation, myocarditis, congestive heart failure, ascites, edema of legs. Admitted to Touro Infirmary January 18, 1937 and discharged March 16, 1937. *Present Illness*: Patient began having cardiac symptoms two years ago. Ten months ago her abdomen began to enlarge. A few months later her feet began to swell. Digitalization merely prevented an increase of the edema.

Physical Examination: Orthopneic. Moist rales at both bases. Heart much enlarged; no murmurs. Pulse 114. Heart rate 160. P. D. 46. Pulse and heart rhythm totally irregular. Abdomen markedly protuberant, shifting dulness (liver not palpable because of distension). Pitting edema of ankles. B. P. 140/80. Electrocardiogram showed "auricular fibrillation, definite myocardial disease." Weight 198 pounds. Venous pressure 270. *Course*: Digitalization improved her general condition. Six days later the abdomen was less tense and a large liver could be felt. Marked ascites, however, was still present. It was then decided to attempt reduction of the ascites by means of the mercurials. She was given a mercurin suppository on January 21, and 23, with slight increase in urinary output, and a loss of five pounds in weight. From this time on injections of salyrgan had striking effect, her weight dropping to 154 pounds, apparently her basal state. Two intravenous injections of mercupurin were also administered.

Comment: This case illustrates the value of salyrgan and mercupurin in the control of ascites due to an old cardiac liver where thorough digitalization failed. It is quite probable that a preliminary abdominal tap, followed by the administration of the mercurials, would have shortened the patient's stay. Mercurin suppositories were not particularly effective in this instance, although there was some loss of weight, and no rectal irritation. After this patient reached her basal weight, salyrgan and mercupurin were given alternately in the same dosage in order to compare their relative efficiency. Mercupurin appeared to be slightly more effective than salyrgan in this instance.

Case 5. W. H. H., male, aged 69 years. Diagnosis: Arteriosclerotic heart disease, congestive heart failure. (January 7, 1936.) *Present Illness*: Had always been well except for arthritis. During past few nights has had smothering spells. Last night complained of pain in his jaws. His feet have been swelling at night for a few weeks. On January 10, he had an attack of acute pulmonary edema. *Physical Examination*: Well nourished and developed. Moderate general edema. Abdomen: prominent, probable ascites. Slight dyspnea. Crepitant rales at bases. Pulse 100, few ectopics. B. P. 165/85. Heart: Moderate enlargement to left; systolic murmur at apex accompanying first sound; short soft systolic murmur at aortic region; A_2 loud and metallic in quality. *Course*: The patient was digitalized during the first week. At this time the pulse rate was 70 and the general condition better although some generalized edema was still present. He was put on ammonium chloride and aminophyllin, or theocin, without much improvement. From April 1936 to January 1937 he was given salyrgan and mercupurin injections with good diuretic effect, but a moderate amount of edema still persists.

Comment: In this case, both salyrgan and mercupurin were used with good effect. In fairness to salyrgan it should be noted that mercupurin was administered in larger doses than salyrgan which may account for the greater output. Two mercurin suppositories were given with splendid results and no rectal irritation.

Case 6. S. F., female, 58 years of age. Diagnosis: Diabetes mellitus, arteriosclerotic heart disease. Admitted to Touro Infirmary October 14, 1936 and discharged March 2, 1937. *Present Illness*: Progressive dyspnea for past few months. About the latter part of April 1936, she began to develop edema of her feet and ankles. She has been diabetic for 12 years. She was treated at Touro from May 2 to June 10, 1936, for congestive heart failure. After leaving the hospital, she took two or three units of digitalis a day. Two weeks ago she noted that her legs and also her abdomen

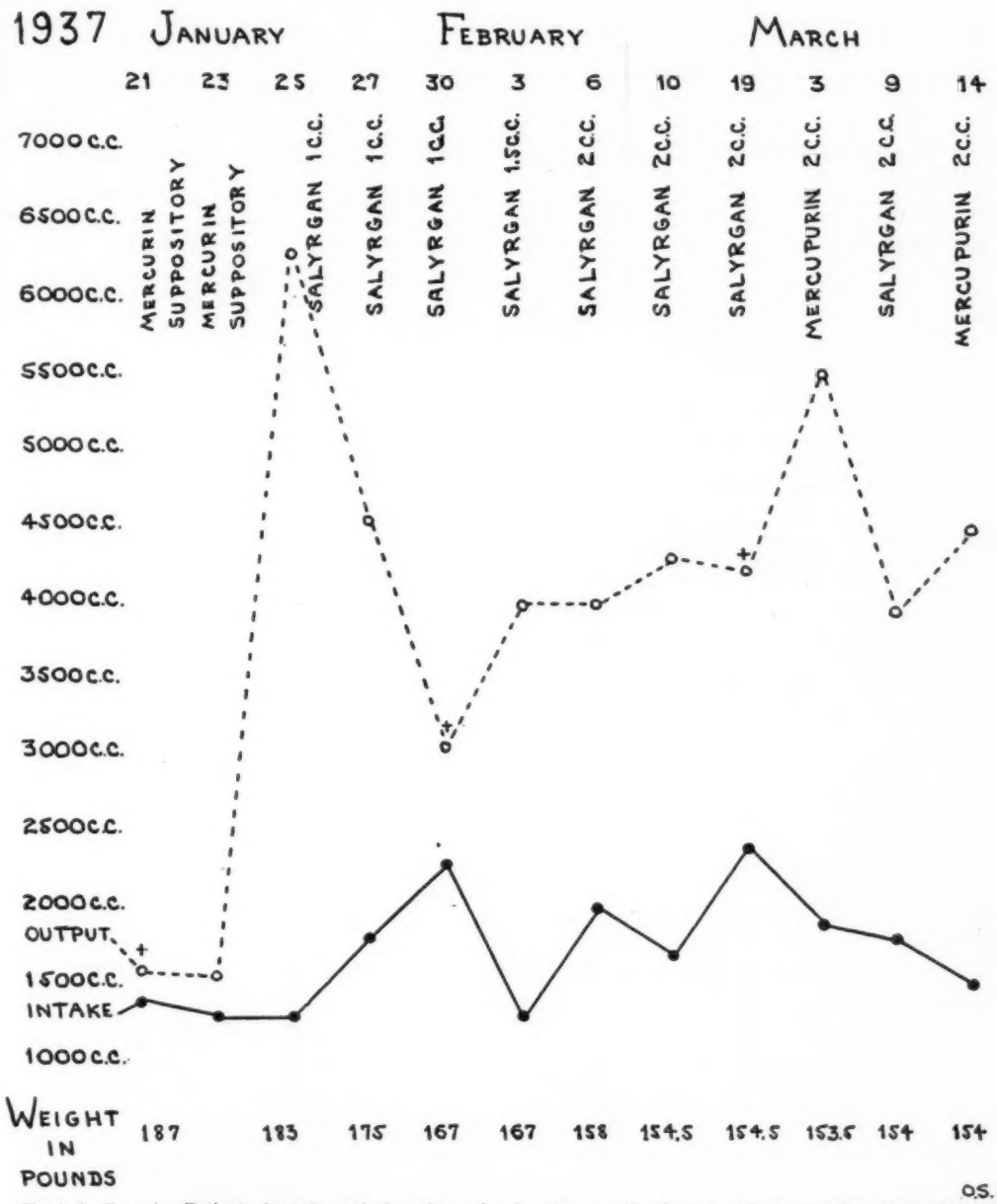

Chart 1, Case 4. Patient showed marked ascites of cardiac origin. This condition was entirely controlled by the use of salyrgan and mercupurin. Note the loss of 29 pounds in weight over a period of two weeks.

were swelling and that she had gained about 15 pounds in weight. The shortness of breath became more and more marked. Her urine is sugar free on a diet of 125 C, 60 P and 60 F. *Physical Examination*: Patient slightly orthopneic. Pulse 80. B. P. 148/90. Moist rales at both bases. Heart enlarged and heart sounds distant. Abdomen protuberant; some shifting dulness; liver palpable. Pitting edema of legs. T. N. P. N., 37.5 mg. per 100 c. c. Dextrose 105 mg. per 100 c. c. Urine: 1.012, sugar 0, albumin 0. Few pus cells. *Course*: After nine days of bed rest and digitalis, the edema still persisted. Salyrgan was advised and because of poor veins in cubital region it was injected into a vein on dorsum of left hand. During the injection a few minims escaped into the

tissues. This developed into a necrotic area which sloughed out leaving a large ulcer. It required 4 months to heal this lesion. The patient refused more injections of salyrgan, consequently a salyrgan suppository (0.4 gm.) was given on October 26. This caused excruciating burning in the rectum for about 20 minutes and no increase in the urinary output. As the edema was increasing the patient was persuaded to try mercurin suppositories. These gave excellent results for many weeks with no rectal irritation.

Comment: This case illustrates the extreme care required in giving intravenous injections of salyrgan, especially in a diabetic. In addition, this case demonstrates the practical value of suppositories. It is to be noted that as the patient gradually grew worse, the output of urine from the mercurin suppositories slowly diminished and finally it was necessary to resort to the intravenous route.

Case 7: B. F., male, 49 years of age. Diagnosis: Malignant hypertension, myocardial insufficiency, chronic arteriolar-nephro-sclerosis, generalized edema, ascites. Admitted to Touro Infirmary April 1, 1937; discharged April 7, 1937. *Present Illness*: Was told seven years ago that he had hypertension. The blood pressure has gradually gone up to 250. Headaches for seven or eight years but worse during past year. Has slept poorly for past three months. For past six weeks has noted swelling of face and ankles, also abdomen. Dyspnea on slight exertion. *Physical Examination*: Fairly well nourished. Eyelids and face puffy. Skin pale. Weight 160 pounds. Mucous membranes slightly pale. Pulse 86. B. P. 260/140. Heart markedly enlarged; sounds are loud at apex; A_2 accentuated and metallic. Moderate substernal dulness. Radials thickened. Lungs: Crepitant rales at bases. Abdomen: Liver moderately enlarged and tender, shifting dulness. Edema of ankles and legs. Urine: 1.010, trace of albumin, sugar 0, hyaline and fine granular casts. T. N. P. N., 46.2 mg. per 100 c.c. Concentration test: 1.008, 1.010, 1.006. P. S. P. 40 per cent in two hours. *Course*: He was put on ammonium chloride, gr. 60 daily, and two days later was given 1 c.c. of mercupurin by vein with good results. Three days later a full dose of 2 c.c. of mercupurin was adminisited with still greater increase in urinary output. During his week's stay in the hospital he lost 13 pounds.

Comment: Previous to this patient's admission

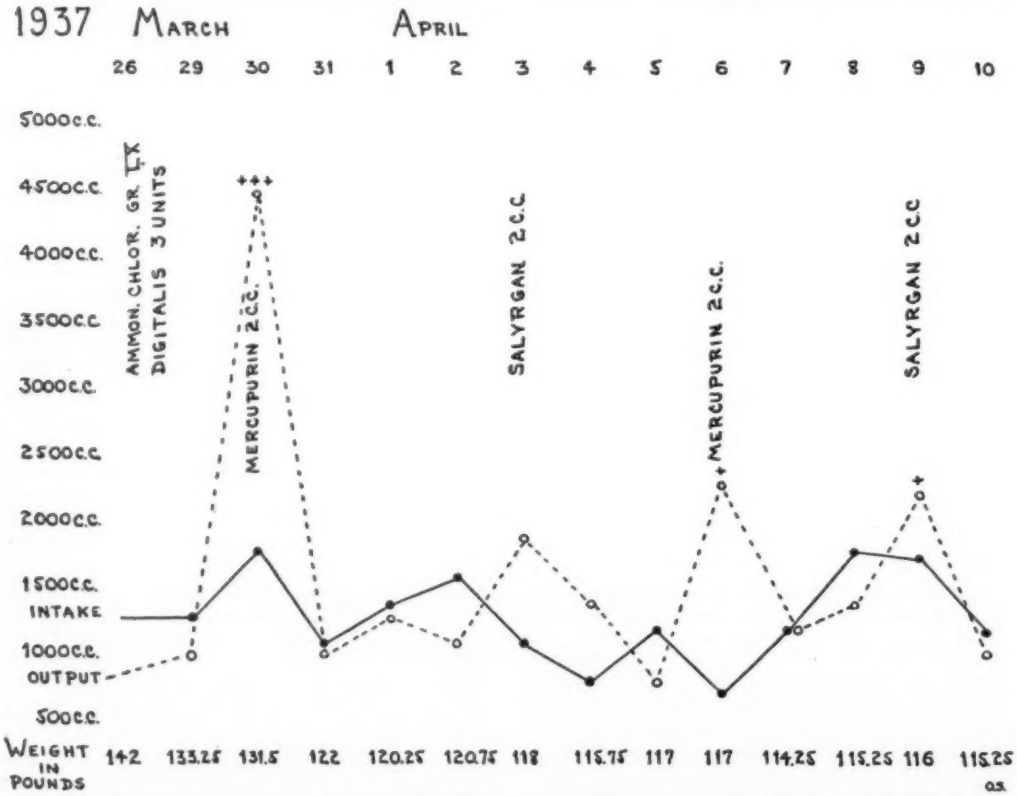

Chart 2, Case 8. Demonstration of the rapid elimination of anasarca in a patient with rheumatic congestive heart failure of two months' duration, following the use of mercupurin and salyrgan.

to Touro he had gradually become more and more edematous and dyspneic, and it was felt that an attempt should be made to lighten the load on the heart by reducing the edema. This was accomplished by mercupurin without any ill effects, and he left the hospital feeling much improved. Since his return home he has been taking mercurin suppositories with good results. It is not to be expected, however, that this improvement will be anything but temporary; nevertheless, it exemplifies the fact that patients in terminal conditions may often obtain some relief from distressing symptoms by the mercurials.

Case 8. L. H., female, aged 55, graduate nurse. Diagnosis: Rheumatic heart disease, mitral stenosis, auricular fibrillation, generalized edema, Admitted to Touro Infirmary March 26, 1937. *Past History*: Rheumatic fever at 18 years. In 1906 she was told she had mitral disease and turned down by the British Army. Thyroidectomy in 1924. *Present Illness*: She had an attack of palpitation on January 1, 1937, but continued teaching in spite of increasing weakness, edema and dyspnea. On February 1, she was put to bed by her doctor, and given digitalis. The dyspnea and edema of feet and abdomen, however, did not decrease. She was sent to Touro on March 26. *Physical Examination*: Poorly nourished. Orthopneic. Dulness at both bases. Very slight exophthalmus. Thyroid not palpable: thyroidectomy scar. Pulse 90, irregular. Heart rate 96. Heart: Enlarged. First sound snapping with suggestion of late diastolic murmur. Abdomen much distended; liver enlarged, shifting dulness. Edema of feet and legs. Weight 142 pounds. Blood picture, slight anemia. Electrocardiogram showed auricular fibrillation. Blood chemistry normal. Wassermann: Negative. P. S.P. 80 per cent in two hours. Concentration test: 1.010—1.014. Urine: slight trace of albumin. Roentgen ray of chest, enlarged heart, pleural effusions, more marked in right chest, increased lung markings (congestion). *Course*: As the patient gave evidence of some digitalization she was put on six units daily for the first two days, then the dose was dropped to three units daily, and finally to two units. Ammonium chloride, gr. 80 per diem, was begun. After the fifth day, mercupurin and salyrgan were given alternately in 2 c.c. doses with surprisingly good effect. Twelve days after her admission, her weight had dropped from 142 pounds to 114¼ with practically complete elimination of her edema.

Comment: This case illustrates how rapidly a patient can be rid of edema with mercupurin and salyrgan, thus removing an enormous load from an over-worked heart. A roentgen ray taken April 11, showed complete absorption of the pleural transudates. The ascites has disappeared and the liver is smaller. Patient is no longer orthopneic, and is comfortable and in good spirits. This case again emphasizes the slightly greater efficiency of mercupurin although the difference after eliminating the results from the first injection of mercupurin was very little.

SUMMARY

Eight cases are presented to demonstrate the value of, and the pitfalls encountered in, the administration of the mercurial diuretics. Of the three mercurials employed, one was discarded because of its toxicity (novasurol). Of the remaining two (salyrgan and mercupurin), mercupurin appeared to be slightly more effective in increasing the urinary output. When these drugs are used by vein, it is very important to be sure that no leakage occurs around the needle, and that the patient should be cautioned to state immediately the presence of any burning sensation near the puncture, in order that the injection be stopped at once. By this means necrosis and ulceration may be avoided. Patients who have very poor veins, or in whom it is not practical to use the mercurials by the intravenous route, may be treated with the mercurial suppositories which are generally quite satisfactory. The urinary output from suppositories, while slightly less than by vein and not of as long duration, is quite prompt in its appearance. Most of the output is over after 12 to 14 hours so that if a suppository is taken in the morning the night's rest is not apt to be disturbed, a factor which is advantageous. The only objection to this mode of administration is that it is less reliable than the intravenous route and at times causes some rectal irritation, salyrgan somewhat more so, in my experience, than mercurin.

Most of the cases received ammonium chloride in association with the mercurial therapy, for it is generally accepted that this procedure enhances the diuretic effect of the mercurials. It is my impression that theobromine and theophylline also augment the efficiency of the mercurials. There is evidence in the literature that mercupurin owes some of its diuretic power to its combination with a purin base, although the xanthines are not generally efficacious as diuretics except in large doses. Contrary to the opinion of many authorities, ascites has usually been satisfactorily controlled by the mercurials, minimizing the necessity for tapping,

and, at times, eliminating its use. In desperate cardiac cases with severe kidney involvement, the cautious use of small doses of the mercurials may prove that there exists sufficient functioning renal tissue to produce a good output of urine, thereby temporarily preventing the further increase of edema. Furthermore, in chronic congestive failure it is possible that not infrequently we delay the use of diuretics too long in waiting for rest and digitalis to free the patient of edema. When we consider the extra work imposed upon an already overburdened heart by the presence of edema, any measure that will aid in removing this load more rapidly and restoring compensation and cardiac reserve should be seriously deliberated.

It has been safe to inject the mercurials at three or four day intervals when indicated and no toxic effects were noted with salyrgan and mercupurin in moderate doses. In no instance was more than 2 c. c. administered intravenously.

In summing up, it may be stated that the mercurial diuretics, when properly used, will often prolong life and bring relief and comfort to the sufferer with chronic edema.

CONCLUSIONS

Experience in the administration of the mercurial diuretics permits the following conclusions:

1. Novasurol, because of its toxicity, should be discarded in favor of the newer and less toxic mercurials.

2. In cardiac edema, where full digitalization and rest have failed, salyrgan and mercupurin will frequently succeed.

3. Ascites due to cardiac or other forms of hepatic cirrhosis may often be controlled by the mercurial diuretics, or at least the interval between tapping much prolonged.

4. Of the two mercurials, mercupurin appears to be slightly more efficient than salyrgan.

5. Suppositories of salyrgan and mercurin are a practical addition to our armamentarium.

6. Mercurial suppositories are not as dependable and constant in their action as the mercurials by the intravenous route.

7. The previous and concomittant use of ammonium chloride by mouth enhances the diuretic effect of salyrgan and mercupurin.

DISCUSSION

Dr. A. A. Herold (Shreveport): I think Dr. Lyons has given us a very interesting and instructive paper. He said that when digitalis and rest fail in cardiac edema, he gives mercurial diuretics. I should like to add to rest and digitalization, high protein diet and low sodium intake. It is known that the sodium does the harm.

Why do I say high protein diet? Because I have seen edemas disappear, where there was not any renal damage of any kind, under high protein intake. Protein seems to have something to do with the osmosis of the tissues. For some reason, it helps the tissues take up the body fluids. In addition to that, these cases very frequently come to us that have been treated by their local physicians and protein entirely restricted, with the result that the heart is failing through want of proper nourishment. After rest, digitalization, high protein diet and the low sodium intake, then mercurials are in order.

My experience has been with novasurol and salyrgan. With the novasural I had some toxic effects, mercurial poison. I have discarded that drug. With the salyrgan, I have never seen any ill effects, starting with ½ c.c., combining it with ammonium chloride by mouth. I am giving the chloride, but not the sodium radical.

I would like to hear Dr. Lyons' expression on this addition to his preliminary treatment.

Dr. S. J. Couvillon (Moreauville): As I understood it, the medications recommended were for intravenous or intramuscular use. Naturally, those patients would have to report to the doctor's office, or the doctor to his patients' homes often and regularly. Doing general country practice as I do, it is a physical impossibility to see my patients as often as the doctors from larger medical centers and, of course, our methods of treatment must, or necessity, in most cases be straight oral medication. I would like to ask the doctor if he does not think that a preparation such as phenyl-mercuric nitrate, combined with urotropin, with digitalis when the elevation of blood pressure will permit and the measures which Dr. Herold so nicely brought out, could not as well be used in the treatment of edematous conditions when and where mercurial diuretics are indicated, with just as much efficacy as the intravenous and intramuscular preparations he mentioned?

Dr. J. B. Elliott (New Orleans): I have employed salyrgan lately in two cases, using suppositories ,and I will never do it again. These patients had the most intense pain and soreness in the rectum, one suffered for three and the other for two weeks. I impressed on them the great value of the drug. They agreed thoroughly, but not by rectum for them.

Dr. S. Chaille Jamison (New Orleans): I would

like to ask Dr. Lyons if he always used ammonium chloride or if he sometimes used ammonium nitrate and, if he used ammonium nitrate, did he find any difference between that and ammonium chloride preliminary to the administration of salyrgan.

Dr. J. H. Musser, Jr. (New Orleans): There is no question that what Dr. Lyons has given us today is of tremendous importance and value. Time and time again patients are seen who apparently are carried along successfully with the use of these particular mercurials alone.

I have heard a good deal about the ill effects of novasurol, but I personally have never seen any patients hurt by the preparation. I remember writing to Dr. Keith, in the Mayo Clinic, several years ago asking him about it. I still have the letter in my files. He said he had never seen any ill results from it. I think, however, it is very much safer to use the other preparations from which there has been no ill report whatsoever.

There has been a patient in the hospital for some four months, a woman in chronic failure, to whom rest in bed was as a thin slice of bread and butter is to a hungry child, not much, and who was getting digitalis steadily all that particular time. This is in answer to the question of how often it can be repeated: During that period of four months, that woman had doses of salyrgan twice a week without any ill effects whatsoever. She would fill up again very promptly after taking the drug, and then it would have to be repeated. Undoubtedly, her life was prolonged for some months, and eventually she got sufficiently well to leave the hospital. I think that merely illustrates what Dr. Lyons has been trying to bring out, what a big help sometimes the use of these mercurials is for relieving the edema and, secondarily, taking the strain off a failing heart.

Dr. Randolph Lyons (In closing): I do not want to be misunderstood as stating in this paper that there are no other diuretics except the mercurials. I limited this paper to the mercurial diuretics because of the limitation of time. One cannot go into all the diuretics in fifteen minutes. I think we have other valuable diuretics besides the mercurials, but there are very few of those that can be used except by mouth, with the one exception, metaphyllin. That can be used by vein with pretty good diuretic effect. Most of the xanthine bases and other diuretics that we have, have to be given by mouth. Frequently we have patients with cardiovascular trouble, who are not able to take these drugs by mouth. Their stomachs will not tolerate them.

I agree perfectly with Dr. Herold. When I said, after we had done everything we could for them with digitalis and rest, I did not mean there were not other measures besides digitalization and rest that could be done for cardiac patients. Patients on too low a protein diet may have their blood proteins reduced to the edema level. They need to be well nourished. I also agree to the statement about sodium salts. I think most of my patients were handled in that way. I did everything I knew how, at any rate, to get rid of the edema and did not succeed, and had to fall back on something else.

I cannot answer the question on mercuric nitrate by mouth, because I have never used it. In the literature, lots of mercurials have been used, but none of them has stood the test of time as well as those I mentioned as given by vein or by rectum as suppositories.

One of the patients discussed here had a great deal of pain and burning from salyrgan. My experience agrees to a very great extent with Dr. Elliott's, that salyrgan can be very irritating at times. Mercurin, however, does not seem to be irritating, or at least the irritation is very slight. I have given thirty-five to forty suppositories of mercurin, and I have had hardly any complaint from anybody about it, so it may be a better preparation from that point of view.

I cannot answer Dr. Jamison's question about the ammonium nitrate. I know of no reason why it should not be probably as effective as ammonium chloride. I have used ammonium chloride for so many years and with such satisfactory results that I have not seen any reason for trying any other. Now it is put up in enteric pills, so that it does not upset the stomach, and it is possible to get in pretty good doses of it with very little intestinal or stomach disturbance.

As to Dr. Musser's statement about novasurol, I know he is perfectly correct. At Mayo's, and in other places too, hundreds of doses of novasurol have been given with apparently little trouble. On the other hand, if you have two or three severe, toxic reactions from the drug, I do not care if somebody else reports a thousand administrations without any reaction, I prefer not to use it. I have given large numbers of injections of salyrgan and mercupurin, and I have never had any toxic reactions. The only reaction noted was in the woman with the jaundice and hepatic cirrhosis. She was running a fever anyway, and she had a paroxysm of temperature following two of these injections. I am not at all certain they were due to the mercury, because she took six injections after that and had no reaction whatsoever from them.

DIVERTICULOSIS AND DIVERTICULITIS OF THE INTESTINAL TRACT*

T. P. LLOYD, M. D.
SHREVEPORT, LA.

Diverticulum of the colon was first reported by Druveilhier in 1849. The pathology of this condition was first described by Graser in 1898, and in 1914, Abbe first diagnosed diverticulitis of the colon by roentgen study. Following these pioneers there have been innumerable workers, and the literature has become quite voluminous. While at the present time the diagnosis of diverticula in some part of the intestinal tract is in a day's work of every radiologist, the majority of medical men are slow to suspect such pathology, probably because we are not diverticula conscious.

The incidence of diverticulosis of the intestinal tract is about 1.25 per cent in the duodenum and 6.6 per cent in the colon out of 3000 roentgen ray examinations, at the Cleveland Clinic (personal communication), and about the same at the Highland Clinic out of 3,681 observations.

It is estimated that one-fourth of the cases of diverticulosis develop diverticulitis, and about one-fourth of the cases developing diverticulitis will require surgical treatment. Diverticulosis is more frequently found in men than in women. The favored build is the short stocky type, usually past the age of forty. Whether or not these anatomic anomalies are congenital or acquired does not concern us in this discussion.

The anatomic characteristic is a herniation of the mucous membrane through the muscle coat pushing outward the visceral coat, like the so-called blister on an inner tube, which it, in fact, really is. Once this pouch becomes infected diverticulitis is present. This inflammatory process causes symptoms proportionate to the degree of inflammation, the amount of pathology present, and, to some extent, the anatomic location.

Secondary diverticula of the first portion of the duodenum due to duodenal ulcer are frequently encountered, and usually give no symptoms other than a vague uneasiness, some tenderness and indigestion. Treatment of secondary diverticula, due to duodenal ulcer is, of course, that of the primary cause.

Primary diverticulum of the second and third portion of the duodenum rarely requires surgery and certainly has no characteristic symptoms unless large, and retains barium for six to twenty hours in which case inflammatory changes may occur.

Treatment of secondary diverticula, due to duodenal ulcer is, of course, that of the primary cause.

SYMPTOMS

The symptoms of diverticulitis of the colon are often vague and ill-defined. The onset may at first go unnoticed or there may be a series of attacks of increasing severity before one comes to the realization of the fact that a deep infection is present. Occosionally, the first attack has a sudden and acute onset, simulating appendicitis though on the left side, so-called left-sided appendicitis. Diverticulitis, as a rule, is a chronic condition.

In a given case presenting exacerbations of subacute or acute episodes, with abdominal pain, most marked on the left side, though not always, constipation (diarrhea occasionally), fever and leukocytosis, particularly in the short stocky man, forty or more years of age, diverticulitis should be suspected. A roentgen ray examination should not be neglected. I have seen patients with right-sided pain, simulating both appendicitis and cholecystitis.

MEDICAL TREATMENT

The treatment of diverticulitis of the colon depends upon the severity of the process and the complications. Medical treatment is important, and should be instituted at the earliest possible moment. Complications may be prevented, and the duration of an attack may be materially shortened. The patient may have been seen rather late in the disease; a tumor mass may be palpated, even an abscess may be suspected, and yet, if obstruction is not present, proper medical treatment is the procedure of choice. Conservatism pays the best dividends. This above all other interabdominal inflammatory conditions deserves "watchful waiting" as regards surgery. Its very nature almost forbids surgery, except in emergency.

*Read before the Louisiana State Medical Society, Monroe, April 27, 1937.

Rest is a prime requisite, as in any other inflammatory process; obviously rest of the colon is impossible. The nearest approach is to limit as far as possible peristaltic activity by interdicting all food by mouth for an appropriate length of time, followed at the proper time by non-residue diet. Intravenous glucose and saline should be given to maintain normal chemical balance. Heat should be constantly applied in the form of moist packs; antispasmodics to physiologic tolerance. Opiates may be required occasionally and should be given freely when indicated. Large doses of olive oil by mouth, and warm olive oil retention enema, is far superior to mineral oil. It facilitates easy painless bowel evacuation, causes no gas and is non-irritating. The value of rectal irrigation is questionable. As convalescence advances, a smooth diet should be used, gradually increasing the caloric intake. After recovery, the diet should be free of coarse fibers and seeds. Constipation should be prevented by the use of mineral oil by mouth, and the usual general principles of bowel management instituted.

SURGICAL TREATMENT

The surgical treatment of diverticulitis depends upon the complications which may arise. Drainage of abscess may be necessary. Resection of gut may rarely be indicated. Colostomy above the site of an obstruction may be the operation of choice. Abdominal drainage may occasionally be life saving when a diverticulum has perforated the gut.

The following case reports present the various conditions with which we may be confronted at any time:

CASE REPORTS

Case 1. O. L. H. has had numerous attacks of diverticulitis of the descending colon since 1933. He has been a patient in the Highland Sanitarium at least once a year since that time; occasionally, due to indiscretions of diet, he has had several attacks during the year. His symptoms are a generalized abdominal pain and usually preceded by constipation. After two or three days, his pain is most marked in left lower abdominal quadrant. There is general abdominal tenderness, most marked in left side. His temperature ranges from 99 to 102°. There is leukocytosis. Duration of attacks is from two to four weeks.

Roentgen ray examination reveals numerous diverticula of the descending colon. Treatment has been rest in bed, hot moist packs to abdomen; olive oil by mouth and warm olive oil retention enemas, residue free diet. Dilaudid was given for relief of pain; glucose and saline intravenously. He is a short, stocky man, aged 50, weighing 185 pounds. He has always made a satisfactory recovery without complications. He died recently of coronary thrombosis while convalescing from an attack of diverticulitis. This represents the recurring type treated successfully medically.

Case 2. C. D. K. entered the Highland Sanitarium with the following history: Two hours previously while sitting at his desk, he suddenly experienced severe pain in the suprapubic region, shortly followed by pain in penis and scrotum, and desire to urinate. He was not badly shocked, but his board-like abdomen suggested a surgical abdomen. Operation revealed a large ruptured divertculum of the sigmoid. He died of peritonitis. This represents the perforative type of diverticulitis without history of previous attacks, indigestion, constipation or abdominal pain.

Case 3. Mrs. J. B. O. entered the sanitarium complaining of nausea, vomiting and generalized abdominal pain. These symptoms progressed, necessitating a diagnosis of intestinal obstruction. Operation revealed the obstruction was due to diverticulitis, and 10 cm. of the terminal ileum, which contained the diverticulum, was removed. She recovered. This represents the obstructive type.

Case 4. J. H. R., a short, stocky man of 50 years of age, entered the Clinic with the history of hemorrhage from the bowel on numerous occasions. Recently a massive hemorrhage was experienced, but he had very little abdominal pain and little tenderness. He has had frequent attacks of indigestion. Roentgen ray examination reveals numerous diverticula throughout the gut, over 300 in number. Incidentally, it may be mentioned that this man's brother died of peritonitis resulting from rupture of the sigmoid while taking an enema. This case represents the hemorrhagic type.

CONCLUSIONS

1. Diverticulosis of the intestinal tract is frequently encountered in routine roentgen ray examinations, about 8 per cent.
2. Diverticulosis is more frequently found in men than in women, usually, of the short, stocky build, and in those past 40 years of age, though it may occur at an earlier age.
3. Diverticulosis is six times more frequently found in the colon than other portions of the intestinal tract.

4. Diverticulitis occurs in about 25 per cent of cases of diverticulosis. Twenty-five per cent of the cases of diverticulitis may require surgical treatment.

5. The outstanding symptoms of diverticulitis are generalized abdominal soreness, pain in lower left abdominal quadrant, associated with constipation (occasionally diarrhea), slight fever and leukocytosis.

6. A palpable tumor is frequently found in the obstructive or partially obstructive type.

7. Complications of diverticulitis are obstruction, abscess, hemorrhage, perforation and fistula.

8. The medical treatment of diverticulitis is rest, antispasmodics, hot moist packs, starvation followed by residue free food; glucose and saline by vein, olive oil by mouth and warm olive oil enemas; opiates when indicated; no colonic irrigations.

9. The main object of this paper is to emphasize the medical treatment of diverticulitis.

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DISCUSSION

Dr. W. M. Hunter (Monroe): All physicians are confronted with the symptoms of abdominal pain or distress. Of course, the appendix gets blamed for most of it. I have seen one or two appendectomies done that were semi-acute or acute, and on opening the abdomen, numerous diverticula of the large bowel were found. These apparently gave no trouble and no symptoms for years to come. Dr. Lloyd has brought to our attention the frequency of diverticula. Those patients suffering with vague abdominal distress over long periods of time, I think after this presentation, will be investigated more carefully through the roentgen ray.

Diverticula of the small intestine and of the stomach are extremely rare. Diverticula of the duodenum are not quite so rare, and occur in approximately 1½ or 2 per cent of patients with upper abdominal distress, of whom roentgen rays are taken.

I had an opportunity to see a very interesting case. A good friend of mine had some pictures made for upper abdominal distress. A beautiful diverticulum of the duodenum was seen. He was rayed by a roentgenologist in another town, who kept the patient two days and took twelve pictures, and no diverticulum was seen. He was rayed six months later and the diverticulum was again demonstrated. It is probable that we do have many of these diverticula, but they are not demonstrated as frequently as they are present.

Dr. Lloyd brought out symptomless diverticulosis. Many people will be found, as he has shown, who will go through life and die, and at autopsy they will be found to have multiple diverticulosis with little or no history of abdominal pain.

The symptoms, as he brought out, are vague. On the right side there is the appendix, which should be looked into from the radiologic standpoint. It is true that in some of the acute surgical emergencies the roentgen ray cannot be used because the roentgen ray is dangerous, I believe, in the presence of a suspicious acute abdominal condition. The perforative type, of course, is diagnosed at operation.

The treatment, as he brought out, is strictly a medical problem, because there is no way in the world, with a large number of diverticula, to guess which one has been giving the trouble. The conservative treatment of diet and olive oil has proved best.

I do not recall seeing any cases of the hemorrhagic type. If I have seen them, I did not know the hemorrhages were produced by the diverticula or diverticulosis.

In reference to the percentage of diverticulosis, the consensus of opinion is that it is around 6 or 6½ per cent in the larger clinics. I think we, as physicians, should become more diverticulosis-minded, and we will find that the incidence is greater than we have found in the past. In this particular locality, I think our figures are probably a little less than 6½ per cent, as far as the diagnostic point has been made. It might run 8 per cent, but I do not think our figures run quite that high.

Dr. Lloyd has brought out that secondary diver-

ticula of the duodenum frequently follow healed duodenal ulcers.

Dr. Clifford P. Rutledge (Shreveport): I have been very interested in this subject for several years. It has been my pleasure to study all of these cases with Dr. Lloyd. Fifteen years ago we discovered a case of diverticulosis or diverticulitis more by accident than by intention. In the routine study of the gastrointestinal tract by means of the roentgen ray, we picked up a number of these cases. Now, when a patient comes into the Highland Clinic with pain in the abdomen and vague clinical symptoms, I immediately think of diverticulosis or diverticulitis and make an roentgen ray study. If I do not find it in the routine examination, I give the patient special preparation and make another study. I have missed some cases in the past, but when I restudied them after special preparation I found diverticulosis or diverticulitis.

The preparation is to put the patient to bed and starve him, or put him on a very limited diet for a few days, and then make the examination: Then I find the diverticulum empty, which will fill with the barium meal. In those patients who have acute symptoms it is not advisable to give the barium meal. The barium enema is given to which I add petrolagar or some mineral oil. That tends—I think it does, but I may be wrong—to decrease the lumping of the barium, and we find the enema evacuated very quickly after having made our study. I think this is very important in patients who have acute symptoms.

I have almost come to believe there is no such thing as left-sided appendicitis. Whenever an internist sends a case to me with a diagnosis of left-sided appendicitis, I immediately think of diverticulitis. Some cases are diagnosed as cholecystitis, but, on roentgenologic examination, they are diverticulitis. In one case, I found the two conditions combined. Cases have been diagnosed as renal colic or renal stone that were cases of diverticulitis. Dr. Lloyd spoke of cases of right-sided diverticulitis where the descending colon or pelvic colon was drawn over and attached to the head of the cecum. The patient had some tenderness, but not a great amount.

I had one patient diagnosed as left-sided appendicitis to whom I gave the enema with fear and trembling. The condition was very acute. The internist said he would accept the responsibility, but I accepted some of it with him. I gave the barium enema with the petrolagar, and at that time he showed nothing in the world but a marked spasticity of the descending colon. I could demonstrate no diverticula. I put the man to rest in bed and restricted his food, and within twenty-four hours he passed two ounces of pus by rectum. I re-examined him later and found a large diverticulum on a pedicle; the diverticulum had drained through the anus. Fortunately, it ruptured into the gut and not into the abdominal cavity.

Dr. Allan Eustis (New Orleans): I wish to call attention to the similarity of cases of diverticulitis, especially of the sigmoid, to carcinoma. I think Dr. Elliott will probably recall the case of one of our confreres. At operation, the diagnosis of carcinoma of the sigmoid was made. I think a colostomy was done. At any rate, he lived many years after that. So in these patients, before the abdomen is closed, make a colostomy and possibly they might survive.

Dr. T. P. Lloyd (In closing): Ashhurst reported two cases, one in a child six years old, and another child seven years old, of diverticulosis of the colon.

Heredity may play some part. The patient who was shown on the screen, with such a marked diverticulosis, had a brother die shortly following an enema. He had a rupture of something, and he very promptly died of peritonitis following this enema, so he probably had a ruptured diverticulum. I do not know; he was not in our institution.

I may have made a misstatement about the petroleum oil being irritating to mucous membrane. I doubt if it is irritating very much. I do know that large doses of petroleum oil in almost any amount you want to give to control constipation, produce gas. A good many people are subject to gaseous distention after taking mineral oil, whereas that does not happen when you give them olive oil. That is why we use olive oil in preference to mineral oil. Olive oil is given as a retention enema to help bowel movement. Whether this gaseous formation is due to an irritation, or what not, I do not know, but I know it happens.

I did not say that 25 per cent of the cases of diverticulitis needed surgical procedure. I said 25 per cent of the cases of diverticulosis developed diverticulitis, and that it is estimated 25 per cent of those with diverticulitis would need surgery. I suppose 25 per cent of the cases of diverticulitis that go on to marked inflammation, resulting in an abscess, may need surgery. You may have a rupture that may need surgery; you may have an obstruction that may need surgery. The quotation I made from a very prominent clinic was, "it is estimated that 25 per cent of the cases of diverticulosis develop diverticulitis, and about 25 per cent of the cases of diverticulitis need surgery."

URINARY INFECTIONS IN CHILDREN*

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Acute urinary infections in infants and children are usually recognized, tend to be self limited, and clinically disappear in two to four weeks irrespective of treatment. In these cases the diagnosis of acute pyelitis is the rule and the designation cystitis is sometimes added. When the infection is neither self limited nor therapeutically cured within a period of four to six weeks, the condition is said to be chronic. Moreover, the diagnosis chronic pyelitis is made in most cases in which pus is persistently found in the voided urine specimen. Although the term pyelitis is clinically convenient to employ, it is wholly inadequate as a term pathologically descriptive of the basic lesions in urinary infection, be it acute or chronic. In many children in whom the diagnosis of acute pyelitis could justifiably be made on the commonly accepted diagnostic criteria, urologic examination has shown the acute infection to be limited to the bladder and urethral tract. Repeatedly I have found so-called chronic pyelitis to be simply vaginitis.

ACUTE URINARY (RENAL) INFECTION

The splendid work of Helmholz, Schloss and Wilson, Chown and others has shown the usual renal lesion in so-called acute pyelitis is a diffuse interstitial suppurative nephritis. Changes in the pelvis are of relatively minor concern and of themselves cannot be interpreted as an important element in the clinical picture in so-called pyelitis. More correctly the lesion should be designated a pyelonephritis for when the initial parenchymal pathology is hematogenous or lymphogenous, the pelvis is secondarily involved in practically every case. When the infection is ascending urogenous or lymphogenous the pelvic infection readily spreads to the parenchyma.

Once the infection reaches the interstitial tissues of the kidney minute diffuse suppurative processes are set up. If the renal defense is adequate, the invading bacteria are destroyed and the minimal lesion caused by them produces no symptoms and heals without trace. When the invasion is more active, either numerically or because of diminished local resistance consequent to congestion or antecedent renal damage by toxemia, the interstitial inflammatory process progresses with cloudy swelling of the adjacent renal tubules, and an abundant influx of leukocytes, especially polymorphonuclear. By careful study of sections in these cases, the polymorphs can be demonstrated in the process of extruding themselves between the epithelial cells into the lumen of the tubule. With more active infection advanced tubular degeneration occurs, finally with irruption of the interstitial suppurative process into the tubular lumen. Leukocytes, which thus reach the drainage elements either by intracellular extrusion or suppurative irruption, constitute the bulk of the pus found in the urine in the usual forms of renal infection. It is notable that their origin is in the interstitial parenchyma rather than in an inflamed pelvis as the designation pyelitis so casually suggests.

With this pathologic picture in mind it is easy to understand why these patients are frequently so extremely ill with their infection and why therapy may fail. It is obvious that active attack upon the infection must usually be from above, i. e., through the systemic defensive mechanism or by medication orally ingested or intravenously injected. Medical therapy is apt to be unsatisfactory because the kidney severely injured by acute infection finds it difficult to eliminate the antiseptic drug in sufficient concentration to render the urine bactericidal. Moreover, gastric disturbances induced by the disease or by the drug itself may prohibit oral medication. In general in acute renal infection, therefore, we must rely upon the maintenance of free urinary drainage and upon the improvement of the patient's resistance to the infection by adequate intestinal elimination, improvement in nutrition, and in some instances by transfusion.

There are several other forms of acute renal infection which may clinically simulate suppurative pyelonephritis as just described. Yet only by prompt and thorough urologic investigation

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in these cases will the underlying pathology be recognized in time to permit the necessary surgical intervention. Such an investigation is urgently indicated in children in whom the picture of acute infection persists unchanged for five days. Rapid nephrectomy is often required.

The most common of these lesions is infected hydronephrosis which in children frequently results from congenital obstruction at the ureteropelvic junction. The usual obstruction is stricture, aberrant vessel compression, fibrous periureteral constriction or angulation secondary to ptosis. In these cases hydronephrotic renal injury is superimposed upon a histologic picture of suppurative pyelonephritis described in the second preceding paragraph. It is notable that in persistent acute renal infection in children, infected hydronephrosis is the lesion most often demonstrated and frequently in these cases the establishment of urinary drainage by the mere passage of the ureteral catheter to the kidney pelvis is promptly followed by astounding clinical improvement and rarely by cure of the infection. This was splendidly illustrated in a girl of eight weeks with persistent hyperacute pyelitis of eight days duration and localizing signs in the right renal region. Cystoscopic investigation revealed infected right hydronephrosis secondary to congenital ureteropelvic junction stricture; the infection was a pure culture of Flexner dysentery bacillus. The establishment of urinary drainage by the passage of the catheter coincident to urine collection and urography was followed in twenty-four hours by a decline of the temperature to normal.

Pyonephrosis is occasionally observed in the young; sometimes it is a late stage of prolonged acute infected hydronephrosis. Acute renal suppuration whether of the diffuse type (pyemic kidney) or of the more or less localized massive suppurative variety (the so-called renal carbuncle) occurs far more often than commonly recognized and in these cases the child is usually allowed to die with the diagnosis acute pyelitis.

Renal infarction and thrombosis result from severe hematogenous infection. These conditions are not uncommon in the young, especially in infants, but are seldom recognized except at autopsy.

Perinephritis and perinephritic abscess may result either from primary bacterial localization (hematogenous or lymphatic) in the perirenal fat or from secondary extension of a suppurative renal process to the surrounding fat. Contrary to common belief among physicians, the diagnosis of perinephritic abscess may be one of the most difficult in clinical medicine. The condition may simulate "acute pyelitis", disease in the lower urinary tract, skeleton, (hipjoint, spinal), intra-abdominal viscera, respiratory organs or central nervous system. The correct diagnosis can usually be made by a thorough urologic examination; one should not wait for the abscess to point in the loin.

PROGNOSIS

The prognosis in acute urinary infection is usually good in older children in whom the disease tends to be clinically self limited. The mortality in infants varies between 10 and 30 per cent and about three per cent of all children over the age of two with acute urinary infection will die. The ability to maintain nutrition and the security of free urinary drainage always improves the prognosis.

TREATMENT

As previously indicated, our greatest therapeutic aids in acute urinary infection in the young lie in: (1) the maintenance of adequate intestinal elimination; (2) the maintenance of nutrition; (3) the removal of focal infections; and (4) the combat of acidosis. The last is extremely important; the acidosis alone kills many infants with acute urinary infection. In older children the liberal employment of colonic irrigations will succeed better than any other measure in detoxifying the patient and may advantageously be used twice a day during the acute stage. It is assumed that an enlarged fluid intake will be administered during the therapeutic period.

Chemotherapy, with the exception of alkalinization, is contraindicated during the acute period, the liberal administration of glucose and alkalies, the latter as sodium bicarbonate or potassium citrate, will usually bring about striking and rapid clinical improvements. Yet this is attributable only to the successful combat of acidosis; the pus and bacterial content of the urine remains unchanged. Most so-called uri-

nary antiseptics are of doubtful bactericidal value and since there is none which may not seriously upset the intestinal tract their use should be actively avoided. Yet their employment in large doses is strongly urged once the child's condition will permit—either in the subacute stage or when he has become afebrile and gastrointestinal function is good. (See treatment of chronic urinary infection).

When urologic examination instigated by persistence of the acute clinical picture has revealed urinary obstruction or localized suppuration, appropriate treatment will depend upon the indications. Thus it may be necessary to establish temporary renal damage by an inlying ureteral catheter or vesical retention may demand an inlying urethral catheter. Perinephritic abscess may require incision or hydronephrosis, pyonephrosis, diffuse focal renal suppuration or renal carbuncle may demand nephrectomy. Sometimes decapsulation, nephrostomy, pyelostomy or ureterostomy will suffice to tide the patient over the acute attack.

CHRONIC URINARY INFECTION

Most children with acute urinary infection are symptomatically well in two weeks and the urinalysis is reported normal in four weeks. Yet in an extremely large minority (in Cabot's series, 50 per cent) the persistence of organisms in the urine will be demonstrated by culture six months later. No patient should be discharged as cured of his infection until at least two negative cultures of a catheterized specimen have been obtained. Moreover, in the study of urinary infections in females of any age only catheterized specimens should be considered and this holds also in males when the voided specimen cannot be aseptically collected.

Because of this persistence of asymptomatic urinary infection in such a relatively large number of children and in whom the condition may be demonstrable only by culture or may be accompanied by a microscopic pyuria, recurrences of acute renal infection are extremely common. These are usually flare-up processes consequent to the acquisition of tonsillitis, enteritis, or other acute focal infections, or occur with the onset of acute urinary obstruction. In many children pyuria of varing degree is accidentally discovered during a routine physical examination. When the infection cannot be cured during four weeks of intensive medical therapy, the patient should be subjected to a complete urologic examination. Such an investigation commonly demonstrates a urogenital anomaly which causes urinary obstruction and/or stasis. It is axiomatic that an anomalous organ is more prone to disease than a normal one. The reciprocal relation between the existence of chronic pyuria and anomalous development in children has only recently received meritorious consideration.

Medical Therapy: No child with persistent pyuria should be subjected to cystoscopic examination until medical therapy for a period of two to four weeks has failed. In this therapeutic regime, intestinal elimination, the eradication of focal infections, improvement of the child's nutrition and the administration of urinary antiseptics in large doses are the measures to be employed. Prior to the advent of ketogenic diet therapy and its successor mandelic acid therapy, methenamine or urotropin in large doses remained our most successful urinary antiseptic and it is still the medication I first employ in children with persistent urinary infection. Yet the dose must be large: 10 to 12½ grains per day per year of age up to 75 grains. I have given more than this without ill effect. Ammonium chloride is my preference as a urinary acidulant and is given in sufficient dose to reduce the urinary pH to 5.5. This titer is readily determined by the use of methyl orange paper which truns red at about this acidity or by the use of nitrazine paper which is olive-mustard at this titer. As a rule we begin with equal doses of methenamine and ammonium chloride which is given for about five days. At the end of this time the catheterized urine specimen is examined and cultured and if not sterile the medication is repeated. It is useless to persist with this treatment longer than two weeks for if the urine cannot be sterilized in this period by this method its continuation is likely to be futile. If the urine is sterilized by this method one may usually rest assured that no important urinary obstruction exists. Hematuria induced by formaldehyde cystitis (urotropin reaction) is of vesical origin and will promptly disappear with cessation of the treatment.

The ketogenic dietary régime or mandelic acid therapy will sterilize the urine in about two-thirds of all children with persistent infection. It is important to recognize, however, that these potent urinary antiseptics will often sterilize the urine of children with important urologic anomalies and for this reason a urologic examination is indicated despite the success of the newer antiseptic therapy. The persistence of the infection prior to ketogenic diet or mandelic acid therapy itself suggests the likelihood of a urinary anomaly and obstruction. The child is at least entitled to a satisfactory excretory (intravenous) urographic study.

UROLOGIC EXAMINATION

In chronic urinary infection the establishment of the correct anatomic diagnosis requires a thorough urologic investigation. It is notable that instrumental reactions following complete urologic examination in children are less than half as severe as in adults and that fear of an unfavorable reaction should never be considered a contraindication to cystoscopic examination in the young.

UROPATHOLOGY

Obstruction will be found in most children with chronic pyuria subjected to thorough urologic investigation. Obstruction is the principal predisposing cause of urinary infection and once infection is established in the presence of obstruction, it rarely can be eliminated until the blockage is eradicated. Urinary stasis consequent to neuromuscular inertia must be considered a phase of urinary obstruction. I have seen several boys alleged to have chronic pyelitis but in whom the pyuria promptly disappeared following circumcision with the eradication of subpreputial urinary retention, stagnation, and infection. A congenitally tight urethral meatus produces obstruction and is frequently seen in girls as well as boys. Other portions of the urethra may also be congenitally constricted. In boys with persistent pyuria, congenital valves, hypertrophy of the verumontanum and congenital contracture of the vesical outlet are the obstructions most often observed in the deep urethra. It must be recognized that the severe renal injury consequent to urinary backpressure induced by these obstructions may of itself be fatal.

Neuromuscular vesical disease (cord bladder) is not uncommon in children; there are more than 85 cases in my series. The condition is frequently secondary to abnormal spinal or neural development; spina bifida occulta is the lesion most often demonstrated. Occasionally, in these cases of sacral cord bladder, laminectomy is of value but in general treatment is unsatisfactory and the prognosis is poor.

Urinary stasis and infection favor the deposition of urinary stone especially in the bladder. Diverticula of the bladder are frequently found in young patients with persistent pyuria and usually result as a blowout formation proximal to congenital obstruction at the vesical outlet or in the deep urethra.

Congenital stricture of the ureter is the commonest obstructing lesion of the upper urinary tract. I found 72 instances in 12,080 pediatric autopsies (1:168), but it occurred in 17.3 per cent (101 of 580 cases) of children with chronic pyuria. The demonstration of stricture requires a careful urologic examination. Ureteral dilatation alone will control many ureteral strictures and not only forestall irreparable renal damage by urinary backpressure but permit cure of infection. To accomplish this dilatation I have recently devised a miniature dilating cystoscope (17 F.) which will take a Garceau ureteral bougie as large as a slate pencil (10 F.). This affords ample dilatation for a child up to the age of puberty.

Ureteral reduplication was found in 166 cases of 26,480 autopsies studied (1:160), but it occurred in one of every eight cases of 580 children with persistent pyuria and in all of whom the anomaly was an important etiologic factor in causing the pyuria to persist. One or both divisions of the ureteral reduplication may be involved. In a number of children I found only half of the reduplicated organ was diseased and in thirteen patients ranging in age from five months to eight years ureteroheminephrectomy —removal of the diseased half of the kidney and the reduplicated ureteral segment draining it—cured the pyuria.

The ureteral orifice may be ectopic and open in the urethra, vagina or in the vestibule. These anomalous ureters almost always suffer urinary stasis and infection is frequently a complication.

Occasionally ureteral calculi are encountered in children. In a girl of 19 months examined because of chronic pyuria a small uric acid stone was seen in the bladder and two uric acid stones were demonstrated by negative pyelography and scratch on a wax bulb catheter in the left ureter, on which side the pyuria originated. These stones were spontaneously passed following instrumental ureteral dilatation and the infection was subsequently cured.

Ureteral obstruction etiologically associated with persistent pyuria in children is often due to an aberrant vessel. Most of these anomalous vessels pass to the lower pole of the kidney and by extra-ureteral compression at the point of crossing obstruct the ureter. I have now operated on 19 cases of vascular obstruction of the ureter in children in four of whom previous attacks of Dietl's crisis induced by the obstruction had caused the appendix to be removed. Conservative vascular resection will save some kidneys but in most instances far advanced renal injury and infection demands nephrectomy as it did in 11 of the 19 children in my series.

Occasionally anomalous vessels deep in the female pelvis compress the ureter. These are usually uterine vessels but may be a branch of the iliacs or hypogastrics.

Renal stones are not uncommon in children. I have performed nephrectomy for stone pyonephrosis in a boy of six months and in a girl of two years. Doubtless most small renal stones in children pass spontaneously and the symptom complex coincident to their passage is interpreted as intestinal colic.

Chronic suppurative pyelonephritis sometimes exists when neither antecedent obstruction nor any other predisposing factor can be demonstrated at the time the examination is made. Secondary inflammatory changes in the ureter and renal pelvis frequently render it impossible to determine the pathologic sequence.

Chronic renal tuberculosis in children is commonly diagnosed chronic pyelitis or chronic cystitis. Approximately one in every fifty to sixty cases of persistent urinary infection in children is surgical renal tuberculosis. The symptoms of cystitis are frequently dominant. Having established the diagnosis, nephrectomy offers the only hope of cure when the disease is unilateral. Bilateral renal tuberculosis is a hopeless non-surgical disease. A tuberculous kidney was removed from a seven year old boy examined because of persistent enuresis of three year's duration. A mild pyuria had escaped detection. The so-called "enuresis" resulted from vesical hyperirritability consequent to secondary tuberculosis of the bladder and disappeared shortly following nephrectomy.

SUMMARY

Attention has been directed to the fallacy of the term pyelitis as pathologically descriptive of the important pathology in renal infection. The usual lesion is an interstitial suppurative pyelonephritis. Other conditions which may clinically simulate the picture in acute pyelonephritis have been briefly discussed and are likely to be demonstrated by thorough urologic examination in children whose acute urinary infection persists four to five days without abatement. The medical and surgical therapeutic indications in acute renal infection have been briefly outlined. Urinary infection not cured in four weeks by intensive medical treatment demands thorough urologic investigation. Obstruction will almost always be demonstrated and in an astounding number of cases anomalous development of the urinary tract will be found. It is notable that infants and children tolerate complete urological examination better than their elders; reactions are only half as frequent and they are much less severe in the young. Fear of unfortuitious sequelae should never be permitted to rule against the performance of a thorough urologic examination in a child when it is otherwise indicated. Having established the anatomic diagnosis in chronic urinary infection, treatment will be based on etiology. With the exhibition of proper surgical considerations it will be found that the young will stand radical urosurgical treatment equally as well as their elders.

One admonition more than any other I would leave with you: examine the urine.

THE RELATION OF THE LIVER TO NUTRITION WITH SPECIAL REFERENCE TO THE NERVOUS SYSTEM

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The liver is concerned in almost all of the metabolic activities that are carried out by the body, and must therefore be considered in any study of metabolism.

It is known that the liver is essential for the intermediary metabolism of the carbohydrates and proteins, and certainly important if not essential in that of the fats. This great gland performs in addition many other functions, having to do with the storage of antianemic substances and vitamins, the regulation of the circulating blood volume and the hydration of the blood, the production of substances concerned with the clotting of blood, detoxification, and the secretion of bile.

The clinical association between certain types of liver disease and pathologic changes in the brain and spinal cord have long attracted attention and incited discussion as to the significance of this relationship. Recently it has been shown that experimental liver damage may be followed by certain degenerative changes in the central nervous system.

CARBOHYDRATE METABOLISM

Since Claude Bernard, in 1849, enunciated his discovery of the part played by the liver in maintaining at a constant level the concentration of glucose in the blood, this function of the liver, which is unquestionably one of the most important activities of that organ, has been confirmed by every investigator who has studied the subject.

Recent investigations on unanesthetized cats by Tsai and Yi, and in dogs by Cherry and Crandall, the animals in each case being equipped with venous cannulae permitting the withdrawal of blood from the portal and hepatic veins according to the technic of London, have shown that the differences in sugar content between the blood entering and that leaving the liver are of the order of 10 to 20 mg. with an average of about 14 in cats, and 0 to 20 mg. with an average of about 8 in dogs.

It seems sufficiently obvious that a large fraction of the glucose supplied to the blood by the liver must come, not from glycogen, but from a continuous new formation of carbohydrate by the liver from non-carbohydrate sources, i. e., from the process referred to as gluconeogenesis by von Noorden and Macleod. Crandall and Cherry have found that the addition of glucose to the blood by the liver continues unabated during a seven day fast.

Since the demonstration by Himwich, Koskoff, and Nahum of a glucose-lactic acid cycle involving the muscles and the liver, it has been recognized that a considerable amount of non-carbohydrate material available for purposes of gluconeogenesis is constantly being liberated from other tissues and presented to the liver in the form of lactic acid; that gluconeogenesis from fatty acids does not take place in mammalian forms. Amino acids, however, are constantly available and there is no question regarding the convertibility of these substances into glucose.

London has found from 0 to 10 mg. of urea for each 100 c.c. of blood. Crandall and Cherry, in preliminary experiments on fasting animals with cannulae placed in the portal and hepatic veins, have found an average of about 1 mg. more urea in the blood leaving than in the blood entering the liver. If it is assumed that 50 per cent of the protein molecule is convertible into glucose, then each milligram of urea formed might liberate 3 milligrams of this sugar. Lactic acid is, of course, convertible gram for gram into carbohydrate.

The importance of the liver for the homeostasis of the blood sugar is especially well illustrated by the train of events following hepatectomy. These have been especially well described by Mann and his collaborators in a series of reports, and they have found that in order to prevent the severe hypoglycemia, glucose must be injected at the rate of approximately 0.25 gram per kilogram body weight per hour.

The importance of glycogen storage in the liver, aside from its value as simply a reserve supply of carbohydrate, has received the attention of several investigators. Both Ravdin and Stone have shown that regeneration of removed liver tissue is much more rapid on a high carbohydrate diet, when the liver is storing large amounts of glycogen, than on a mixed

diet; the regenerative process is actually depressed by an unduly high proportion of fat in the food. The rate of formation of glycogen in the liver has been used to test the nutritive value of various sugars.

LIPID METABOLISM

Although relatively few studies have been undertaken with the specific object of determining whether or not the liver is essential for the normal metabolism of the fats and other lipids, we are not, on the other hand, familiar with any experimental evidence which indicates for the liver such a role. But even though fat metabolism is not known to be vitally disturbed during the brief survival period of hepatectomized dogs, there is a plenitude of evidence to indicate that the liver plays some part, even though it may not be a vital one, in the intermediary metabolism of the fats and other lipids. A point seldom stressed but worthy of consideration is the striking loss of fat from the depots in animals with certain types of experimental liver injury and in patients with cirrhosis.

Due largely to the work of Best and his group, it is known that choline will greatly reduce the amount of fat otherwise deposited in the liver when the diet contains much neutral fat or cholesterol.

OTHER LIVER FUNCTIONS IN RELATION TO NUTRITION

The majority of disturbances incident to abnormalities in the external secretion of the liver are too well known and have been too often discussed to warrant an extensive dissertation upon them here. The presence of bile in the intestines is not only essential for the absorption of fatty acids, but also for that of vitamin D. Carotene, the precursor of vitamin A, is not absorbed from the intestine in the absence of bile, though vitamin A is. When bile is absent from the intestine, the absorption of calcium and iron appears to be reduced.

It is not yet possible to state definitely that disturbances of calcium metabolism, and the similar abnormality in the metabolism of iron that is indicated by the anemia commonly accompanying complete biliary obstruction or bile fistula, are due to non-absorption secondary to the absence of bile. The insolubility of calcium and iron soaps does, as is suggested above, offer one explanation for these changes.

In addition to laying down glycogen and fat, the liver stores a number of other substances that are essential for body economy, mainly vitamin X, B and D.

It has been shown by Ivy that while the liver of untreated pernicious anemia patients contains none of the anti-pernicious anemia substance, storage of this material occurs readily when these patients are given liver extract. Storage of this substance, of the anti-secondary anemia principle, and of iron are functions that relate the liver definitely to red blood cell formation and give a clue to the cause of the anemia frequently found in liver disease. This relationship is further amplified by the occurrence of macrocytosis of the erythrocytes in advanced cirrhosis of the liver in man and animals.

ANATOMIC AND FUNCTIONAL CHANGES IN OTHER TISSUES SECONDARY TO LIVER DAMAGE

In experimental animals, complete obstructive jaundice, bile fistula, and the Eck fistula have been most commonly employed for the production of chronic hepatic disturbances. The disturbances produced by chronic bile fistulae have been recently reviewed by Hawkins and Whippel, who list purpura, osteoporosis, cholelithiasis, duodenal ulcer, and intestinal intoxications as the more outspoken changes that occur. It is indeed striking that so many types of liver injury are followed by the appearance of ulcers in the duodenum which have most, if not all, of the characteristics of chronic "peptic" ulcer in man. Just why the non-reabsorption of bile should result in hepatic dysfunction is obscure, although the evidence of Hawkins and Whipple strongly indicates that this is the case.

While the relationship between liver function and the appearance of experimental ulcer in animals or spontaneous ulcer in man is still highly obscure, the evidence that such a relationship may exist is so suggestive as to stimulate further intensive study of this problem.

Since Hahn, Massen, Nencki, and Pavlov described in detail the symptomatology following excessive meat feeding in Eck fistula dogs, every investigator working with these animals has observed the functional changes in central

nervous system activity that can be produced in them by large amounts of meat protein. This is perhaps the classical experimental evidence for a relationship between liver and brain and cord. Convulsions, ataxia, blindness, coma, and death are characteristic of intense intoxication. Fischler believes the intoxication to be an alkalosis. The degree of central nervous system pathology found in these animals, even after they have been subjected to repeated intoxications, is surprisingly small.

More striking central nervous system degeneration was observed by Weil and Crandall following complete obstruction of the common bile duct in dogs. A spongy necrosis of the walls of the ventricles, and foci of edema and demyelinization in the cortex, were produced. Proliferation of the glia occurred to the extent that dense felts or fibrous glia were formed; the mesenchyme was not involved. I am not aware of other types of central nervous system pathology produced in experimental animals by liver injury, but the experiments quoted are sufficiently convincing.

Clinically, there are a large number of observations pointing to an interdependence of the liver and the central nervous system. Rapoport has found diffuse parenchymatous degeneration of the brain in acute yellow atrophy; Kirschbaum reported diffuse changes in liver atrophy, and Weltman has made similar observations. Chevassut has reported decreased liver function in about 70 per cent of cases of multiple sclerosis. Crandall and Cherry found an olive oil splitting lipase in the blood of patients with multiple sclerosis which they also find in patients with liver disease; they suggest that it may be indicative of hepatic pathology. Lewantovsky has attempted to explain central nervous system changes in liver disease on the basis of a change in the hematoencephalic barrier subsequent to liver injury, but Eisele and Crandall could not confirm the alteration in the barrier.

Finally one must consider those diseases in which simultaneous pathologic changes in liver and central nervous system occur. In the last century, Leyden taught the concept of hepatogenous intoxication of the central nervous system. Quincke, Hoppe-Seyler, and Krehl, however, opposed this teaching and believe that a disturbance of the detoxication function of the liver was the cause. Interest has been aroused in this subject again since the description by Wilson in 1912 of familial lenticular degeneration. Economo and Schilder, and Spielmeyer have pointed out the close relationship between this condition and the pseudosclerosis of Westphall and Struempell. The etiologies advanced have been varied, Wilson and Pollack feeling that the hepatic disease is primary and acts upon the central nervous system through a toxin, while Goldstein states that both liver and brain pathology are the expressions of an endogenous toxin formed elsewhere. Bielschowsky and Hanneberg feel that both are the result of congenital deformities, while Oberling and Kalbo postulate that disease of the central ganglia produces functional hepatic disturbances. The only evidence that can be presented for any of these hypotheses is the experimental demonstration, that damage to the liver may produce pathologic changes in the central nervous system. But this must be applied to combined conditions in the human with great caution, as there is no reason to believe that the various conditions in which liver and central nervous system are both involved may not have varying causations.

For every recognized function of this organ it seems that a test has been devised, so that the clinical pathologist finds himself at a loss to render intelligent advice to the clinician in the matter of the selection of a satisfactory test or group of tests. It is, therefore, comprehensible that for some time conflicting opinions will prevail.

By the use of selected combinations of the tests, functional disturbances of the liver are quite readily demonstrable when existent, but the goal which is foremost in the minds of all workers, is the discovery of a single test that will infallibly guide the surgeon in making a decision concerning the advisability of operative intervention. This objective even now may be attained by devious methods to a relative efficiency of perhaps 90 per cent, but, due to the perversity of nature, it remains extremely doubtful if absolute perfection will ever be attained and maintained.

RELIABILITY OF LIVER FUNCTION TESTS

Impaired liver function usually manifests

itself by demonstrable disturbances in deamination and uric acid destruction, by bilirubin retention or bilirubinate regurgitation, by a decrease in the volume of the bile output with a compensatory elevation of the bilirubin content of liver bile, by decreased tolerance for glucose, levulose, and galactose, by abnormalities in the blood sugar level, by the Burger or Althausen tests, by a lowering of the cholesterol ester content of the blood, by defective dye excretion, by changes in the blood proteins, by excessive urobilinogenuria, by the presence of a macrocytic hypochromic anemia, by high blood phosphatase, and often by means of the tests based upon detoxification. The reliability of these tests, however, depends on the existence of diffuse involvement of the liver or of sufficiently widespread focal involvement to exhaust the reserve power of the organ. Localized lesions, completely walled off, may involve a large portion of the liver without causing any functional impairment whatever, provided that the remaining parenchyma is normal.

Duct occlusion by atresia, calculus, or tumor, without liver damage, is usually demonstrable by failure to obtain bile by duodeno-biliary drainage, although some bile may be obtained in this manner when the obstruction is incomplete. When in doubt, the absence of damage to the liver parenchyma may often be established by normal blood chemistry, normal tolerance for the sugars, normal blood cholesterol esters, and low blood phosphatase. Unfortunately, once in a while liver damage coexists with obstruction, and exploratory laparotomy is necessary in the presence of conflicting findings.

My experience with the bilirubin tolerance test has been most disappointing.

JAUNDICE

Since jaundice, defined as a quantitative or qualitative abnormality in serum bilirubin, is the cardinal sign of a disturbance in liver function, consideration of the major aspects of this phenomenon is warranted.

Manifest in one or all of the three serum bilirubin tests (icterus index, van den Bergh reaction, quantitative bilirubin determination), icterus may be regarded as a constant feature of lobar pneumonia, congestive heart failure, acute alcoholism, febrile cholecystitis, acute pancreatitis, malignant neutropenia, pernicious vomiting of pregnancy, sickle cell anemia, multiple granulomatous abscesses of the liver, and the exacerbations of pernicious anemia with the exception of its terminal aplastic phase. In Laennec's cirrhosis, it is practically always demonstrable, although occasionally of rather low grade intensity. It is frequently associated with duodenal ulcer. In eclampsia, its occurrence is not sufficiently characteristic to differentiate from the usual icterus of full term pregnancy. Among the leukemias, its incidence is high except in the myelogenous type. It is common in Hodgkin's disease. The readily visible jaundice of duct obstruction, catarrhal jaundice, Weil's disease, and acute red (yellow) atrophy of the diffuse or focal type hardly requires comment. Duct obstructions, however, may occasionally be incomplete and subject to spontaneous remissions, and a very low grade of icterus may at times be associated with acute atrophy. In septicemia due to pyogenic organisms, the hemolytic streptococcus, and the gas bacillus, jaundice with a positive van den Bergh reaction is as frequently demonstrable as a positive blood culture. In carbon monoxide poisoning, the degree of jaundice parallels the severity of the poisoning. Many liver poisons cause jaundice, including snake venom, poisonous mushrooms, coal tar products, arsphenamine, chloroform, dinitrophenol, carbon tetrachloride, phenylhydrazine, chloride of sulphur, trichlorethane, trinitrotoluol, tolylendiamine, pyrogallol, male fern, cinchophen, stophan, lead and potassium permanganate.

Jaundice is also frequently encountered in gangrene of all types, including Buerger's disease, in diabetes mellitus, active syphilis, migraine and malaria. Its occurrence in diseases caused by bile-soluble organisms, such as the pneumococcus, gonococcus, leptospira icterohemorrhagica, and trypanosome, demands critical analysis because of its possible relationship to the recovery mechanism. Such a relationship appears to be demonstrable in lobar pneumonia.

Since the occurrence of jaundice should always be correlated clinically with the entity in which it is encountered, and since its characteristics may vary considerably in identical clini-

cal entities, it is probably wise to avoid any fixed system of classification. For this reason the following etiologic factors are postulated as the greatest common divisors in the pathologic physiology of jaundice. Although often operative individually, two or more of these factors may coexist at any time, and one may frequently be superimposed upon another or supplant it during the course of jaundice.

ETIOLOGIC FACTORS IN JAUNDICE

1. *Duct Obstruction.* In the presence of obstruction of the common or hepatic ducts, or regional blockage of the interlobular ducts, bilirubinate regurgitates into the blood stream, giving rise to a positive van den Bergh reaction.

2. *Liver Damage.* In diffuse hepatic involvement, specifically of the central zone polygonal cells, by toxic, infectious, or mechanical factors, loss of bilirubinate from this zone will give rise to a positive van den Bergh reaction. In toxemias affecting only the peripheral zone cells, the serum bilirubin level is frequently elevated without a positive van den Bergh reaction, as in eclampsia.

3. *Pigment Overload.* In true hemolytic jaundice when an overload of pigment passes through the lobule of the normal liver, bilirubinate frequently is lost into the blood stream from the pigment-congested, sensitive central zone cells, causing a positive van den Bergh reaction to occur often at the peak of this icterus. This factor is operative in the icterus following interstitial blood extravasations (accidental and operative trauma, cerebral hemorrhage, scurvy, tubal abortion), and undoubtedly following hemoglobin injections.

4. *Adynamic Elevation of the Excretion Threshold.* This form of icterus, formerly termed "hemolytic", might better be compromised as pseudohemolytic in nature. In spite of a sustained elevation of the serum bilirubin level, the van den Bergh reaction characteristically remains negative when this factor is operative, as in familial jaundice and in pernicious anemia. Occasionally positive reactions may be encountered in severe exacerbations. The exact nature of this factor is difficult to define other than that a defect or anomaly exists in the acceptance mechanism, whereby bilirubin is excreted normally but at a higher blood pigment level. It occurs physiologically in the horse, and in some three per cent of the human race, with its highest incidence in Semitic people. Transient operation of this factor may often be observed in low grade liver toxemias.

5. *Dynamic Elevation of the Excretion Threshold.* This factor is admittedly as yet theoretical, but affords the best plausible explanation of the rapidly ascending and descending jaundice of considerable intensity, associated with undeniable evidence of disturbed liver function, but without demonstrable liver damage, as encountered in the rare "true crisis" reactions of lobar pneumonia and uncomplicated cases of catarrhal jaundice. It may be explained by the withdrawal from action of more functioning units of the liver than is compatible with the excretion of the normal daily bilirubin production, as a result of which not only does the blood bilirubin rise accordingly, but also the functioning lobules, inadequate in number, become overloaded, leaking bilirubinate, and thus causing the appearance of the positive van den Bergh reaction. Alternation in functioning units will involve the entire liver in this "reactive state". The jaundice is capable of rapid subsidence when the liver commits to action an adequate portion of its lobular units. Liver damage may intervene.

6. *Patent Ductus Venosus.* The patency of the ductus venosus Arantii, acting as a natural Eck fistula during the first few days of life, prevents the liver from receiving its full blood supply, resulting in retention of bilirubin in the blood. When the ductus closes, the liver becomes subject to overloading with pigment, and positive van den Bergh reactions frequently occur. The visibility of this jaundice bears little relationship to its true intensity. Persistent patency of the ductus venosus might explain familial jaundice.

SERUM BILIRUBIN TESTS

In general, the three serum bilirubin tests afford a means of almost unlimited sensitivity and utility for the detection of disturbed liver function, provided they are applied repeatedly in a given patient and their normal values are properly evaluated. The normal range for the

icterus index lies from 3 to 5 for satisfactory sera (free from hemolysis, chyle, or murky brownish color). The van den Bergh reaction, by the ring test technic, is normally negative within an interval of ten minutes. The normal serum bilirubin level lies below 0.25 mg. per 100 c.c. Aberrations from these normals demand clinical explanation in terms of liver functions.

In the serial application of the three tests, some of the characteristics of jaundice may be defined as follows:

(a). A balanced icterus exists when the serum bilirubin content is approximately one tenth of the icterus index.

(b). An ascending icterus exists when the serum bilirubin content is approximately equal to or greater than one tenth of the icterus index, with a daily increase in both.

(c). A descending icterus exists when the serum bilirubin level is considerably less than one tenth of the icterus index, with a daily decrease in both.

(d). Jaundice may be said to be static when a balanced icterus obtains without any consistent change from day to day other than minor fluctuations in the bilirubin level, as in duct occlusion; or when the serum bilirubin level remains considerably less than one tenth of the icterus index, fluctuating only slightly, as in the common type of cirrhosis.

(e). Jaundice may be said to be dynamic when an ascending icterus is terminated uneventfully by a descending icterus after having attained considerable intensity. The peak of this curve is often indicated by a premature decline in the serum bilirubin level while the icterus index continues to ascend, commencing a day or two prior to the fall of the icterus index.

Practically nothing definite is known of slight degrees of dysfunction. For centuries, belief in these have existed in clinical medicine, no doubt with justice even though they be only of the hypothetic and assumptive order. The tests of its detoxifying function sometimes give suggestion but can in no sense be depended upon. On the other hand, high degrees of acute cellular inflammation and congestion (hepatitis) may show no jaundice or much if any change in the size of the liver, the two most reliable signs of organic liver disease. In the more chronic conditions, advanced disease may exist without showing definite hepatic insufficiency in the three most reliable tests in my experience, namely the blood phosphatase with renal efficiency test, the bilirubin, and the hippuric acid test of detoxicating ability. Cases may even go on to hepatosclerosis without clinical suggestion of its presence and this being an accidental finding at necrospy. The profession should not deduct from this, however, that the hepatic deficiency test should not be part of routine clinical examination, because often some one or a combination of several would give valuable information, information which could not be obtained in any other way.

VALUE OF CLINICAL COURSE IN DIAGNOSIS AND PROGNOSIS

Acute infectious jaundice (hepatitis) is an ideal illustration of the reserve power of the liver in an acute febrile disorder of short course accompanied by all the constitutional symptoms of severe illness. While the mortality is but one or two per cent, the disease shows in its about thirty day course, the length of time the liver takes for restitution. The same may be said of acute spirochetal hepatitis (Weil's disease)—here usually the commonly seen relapse, after ten days or fourteen days, breaks up the clinical course and may prolong restitution for a few days. An exception is noted in yellow fever, the toxic factor of which is a rapid destroyer of the liver and kidney parenchyma, and the same may be said of acute suppurative hepatitis of the pyemic, multiple or necrotic area types, which, in my experience, is most often due to infections of Escherichia coli, staphylococci and clostridium Welchii. The chemical intoxications generally run a protracted course. In acute yellow atrophy one meets for the first time in serious liver disease, the effect of liver disease on the nervous system due to the multiple cerebral foci that so commonly exist. The course in chronic hepatitis is protracted, the same being true of diffuse syphilitic cirrhosis and the gumma form. Remembering the liability of one condition into another, the acute into chronic (such as is seen in chemical degeneration into yellow atrophy), there are clinical, prognostic and

treatment values in the limited and protracted course of different liver conditions.

NERVOUS SYSTEM

The liver in connection with the nervous system has its main interest in the supposedly liver origin of a vast array of symptoms in which pain and distress are present. Brain and spinal cord conditions, infections, tumor formations and syphilis comprise the known etiologic factors. Here disturbances in cerebration and motility are conspicuous. There are, however, effects of many body conditions on the somatic sensibilities recorded in the brain and spinal cord reflexly bringing about sensory phenomena registering in other parts of the body. In this the liver could participate as might any essential organ in the body. This holds particularly true in the autonomic nervous system, which is definitely a part of the cerebrospinal division. The autonomic nervous system presides over the functions of the organs of the body and it is by way of it that reflex effects are brought about. It innervates the involuntary smooth muscles, all the glands, regulates heat production and loss, mobilizes glycogen in the liver, the rate, force and rhythm of the heart beat, the peripheral arterial flow, the blood volume and hematopoiesis, presides over all matters of nutrition, and in its two divisions is catabolic and anabolic in balanced functions. It is easily influenced by pathology existent anywhere in the body, and by hormones or drugs. It really is an integral part of every other system of the body, reaching from every organ to the chief nuclei and fiber pathways, and from them to other parts of the cerebrospinal system and from within itself to other parts of the autonomic system.

Chronic inflammation and intoxications, both endogenous and exogenous, explode from centers of origin into areas, producing systems often remote from original location. Other than heredity and congenital, the etiology of many diseases in the nervous system are unknown, but generally throughout many of them there is a strong belief that they have a toxic origin. In progressive lenticular degeneration, combined degeneration of the cord, syringomyelia, presenile dementia, multiple sclerosis, neuritis and neuralgia and the functional states of neurasthenia, psychasthenia and neurotic symptoms, this often is most suggestive. Of course, syphilis, infections and tumor formations are definite etiologic groups.

The clinical and necropsy studies of polyserositis (Pick's disease) strongly suggest that this disease is fundamentally cardiac and mediastinal in origin and that the pathology of the liver is secondary to compression of the inferior vena cava from adhesions which cause compression and stretching of the liver—engorging congestion.

Progressive lenticular degeneration (Wilson's disease) is most probably a central neurologic affection. The syndromes are striatal and due to the spread of the disease into the thalmic nuclei. This explains the emotional and intellectual failure, resulting in total dementia. Far more numerous than pathologic disease of the nervous system, are the instances of those we call functional, and in these, the neuroses are the most frequently met with. Fortification is taken in that it has never been proved that changes in inner tension bring structural changes in the nervous system, although I have brought out that long standing toxemias, especially intestinal, can bring about stippling, shrinking of cell body, and destructive changes in nerve cells and neurons. These sensitize the psyche, and, like any illness of material kind, as daily hospital experience and convalescence prove, upset normal innervation. So definite is this that it is common clinical experience to see a neurosis disappear when the toxic factor is removed. It is proper to view the whole subject of the neuroses and psychoses that it should rest on and be supported by internal medicine and to put away the notion that psychiatry deals just with mind disease. One patient cannot be said to have a disease of the body, and the other a disease of the mind. Logic and common sense demand for medicine, psychiatry and benefit to the public that they go hand in hand. Even Freud has said in his last lectures that he is not sure his theories of phylogeny of personality is a contribution to therapeutics.

The liver has no more important function than its detoxicating ability, and toxic substances from the intestines passed into it by the

portal stream. These should be conjugated by the liver but may not be (or totally enough so) by the general body, and would have a baneful effect on the nervous system. There is then a trilogy, the intestines on the supply side, the eliminations of the body on the opposite, and the liver and almost all the tissues of the body between the two. These intestinal states are due to chronic infections of bacteria made worse and only incompletely and temporarily controlled by diets, medications or irrigations, and can best be controlled by immunity producing measures.

LIVER DEATHS

At necropsy in liver failure one sees changes in the liver cells and definite necrosis accompanied by varying degrees of change in the renal tubule cells.

The syndromes characterizing liver deaths may be divided, according to Williams, into three classes: (1) Those in which there is a sudden onset with high fever, coma and rapid death, without signs of uremia; at necropsy only necrosis of liver cells is found; (2) those in which there is a similar picture with later onset and longer duration, with more gradual increase in symptoms including signs of uremia before death; necropsy discloses liver damage of varying degree accompanied by degeneration of liver tubule cells; (3) those in which slowly increasing exhaustion, muscular weakness, subnormal temperature, and decreasing blood pressure progress to terminal vascular collapse, coma and prostration; necropsy shows some change of the liver cells, if not definite necrosis.

THYROID CRISES

There is no more alarming condition in medicine than this illy understood status of profound toxemia. In at least two-thirds of the cases there is definite evidence of liver damage. In the condition there is distinct exhaustion of glycogen, and the impossibility of its storage is present.

PERNICIOUS ANEMIA

The earliest sign in the nervous system of this disorder, in addition to tingling, is loss of vibration sense. There is no more striking advance made in medicine than the effects of liver therapy in this form of anemia, no more striking proof than is bound up in that one of the functions of the liver is its role with bone marrow in erythrocyte production and formation. Macrocytosis is a common finding in advanced or widespread liver disease variously estimated at about 90 per cent. Among the additional nervous symptoms may be mentioned vibratory disturbances in the lower part of the body, hyperflexia, subacute combined degeneration of the spinal cord and cord nerve root changes. The pathogenesis of the neurologic involvement is unknown, but the lesions in the nervous system are no longer held to result from the anemia per se. Liver therapy is especially helpful to produce improvement in the neurologic symptoms of this disease. In the psychoses accompanying or associated with it, liver therapy is not as helpful as when distinct nerve lesions are present. The psychotic symptoms briefly are mental confusion, disorientation, fatigue, poor attention and low intelligence.

STARVATION

This is recognized as a clinical condition of interest in the way of the nervous symptoms which most probably are more particularly due to liver deficiency. The clearest cases are seen in the martyr produced form in which the cardiovascular reflexes lose their fine coordination, hence faintness and dizziness, bradycardia, failing systolic and pulse pressures, slowing of respiration, and loss of lipoids. In some disorders, the nervous symptoms are more prominent, strikingly seen in connection with pellagra in which irritability, depression, apprehension, hallucinations, changes in personality, and even dementia are observed. This being a deficiency disease of nutrition closely linked with vitamin B (G), it leads strongly to the suggestion that proper liver function is also bound up in proper vitamin supply.

DIABETES MELLITUS

Even though the disease was known to the ancients of the first century, the last word and all that should be known about it are still crying for solution in medicine. I have drawn attention to the importance of the lack of enzyme ability in the external secretion of the pancreas in its production. When this is deficient enough there is a shortage in making molecularly complete monosaccharides for conversion into chemically complete glycogen, or

there is present an inability of the diastatic enzyme glycogenase to be able to act upon the sugar substance in the way of holding back its release to the body. In many cases the amylase is nil. There is added significance, as I have shown, in the benefits that come from pancreatic preparations (especially feedings with raw calf and sheep pancreas) without the use of insulin hypodermically. In a series of 100 insulin users in diabetes, 47 were rendered and held blood sugar below 120 mg. and negative urine on raw pancreas without insulin; 43 on pancreas with half and lesser doses of insulin; and in 10 continuation of insulin was necessary. Reasoning further from these facts, it is probably that hyperinsulinism is fundamentally a disorder of the islands of Langerhans', whereas the average case of diabetes mellitus is a more complex disorder, although in instances it could come from pathology in the islands of Langerhans' alone.

BILIARY PASSAGES

One cannot separate diseases of the gallbladder and bile passages from diseases of the liver. Disease in the biliary apparatus commonly brings on organic changes in the liver tissue. Hepatitis of varying degrees and perhaps dysfunction may exist in biliary duct and gallbladder disease. Swelling and stiffening of the left lobe of the liver is a common finding in gallstone disease and quite characteristic of the condition. Swelling of the entire liver is more characteristic of disease of the liver as a whole, such as is seen in cirrhosis, infective states, or the secondary states of passive congestions, such as are seen in cardiac and pulmonary disease.

Distinct neurotic symptoms may ensue with emotional and various painful and neurovascular disturbances anywhere in the body. These are cases that do particularly well under spa management and treatment.

INTESTINAL TOXEMIA

Detail regarding these need not be gone into here, but a few words on phenolemia and indoxylemia may be mentioned. The blood phenols are mostly of small intestine origin and formed by bacterial putrefaction of proteins. They are found free and combined in the blood and to a lesser degree in the tissues. Indol, made from tryptophan, is converted in the liver into indoxyl. It also is formed mostly in the intestine, more so in the large, and accumulates in the blood. The conversion of this substance is almost entirely hepatic. In hepatic detoxification deficiency, indolethylamine, indolpropionic and indolpyruvic acids are liberated into the blood stream. Indicanuria cannot be taken as a basis of hepatic efficiency estimations because its principal site for storage is in the blood, not more than one-tenth to one-seventh being stored in the liver, as compared to the blood and skin. The methods of handling these conditions are biologic, dietetic, exercise, fresh air, increasing skin activity and bowel and kidney elimination.

HEPATIC CIRRHOSIS

It now seems that the term "alcoholic cirrhosis of the liver" should be abandoned. In both Laennec's and Henot's classifications, the localization of the lesion about the portal radicals strongly suggests a gastrointestinal source, probably a type of chronic toxemia, in the small intestine, in which it is possible, a suitable type of toxemia being present, alcohol has an enhancing effect. This would explain portal cirrhosis in the young and non-alcoholic and the absence of it in many cases of chronic alcoholism. Bowles and Clark in 4,000 consecutive autopsies found cirrhosis in 243 (6 per cent), 84, or 35 per cent, in alcoholics; and 159, or 65 per cent, in non-alcoholics.

GOUT

This is largely a forgotten disorder, although it is one of the oldest in medicine. In late years it has been confused in the subject of arthritis, from which of late it is being redeemed and brought back in significance. It is probable that heredity plays in some way in there being present a deficiency of hepatic cell function in manufacturing urea. The liver is the largest maker of urea in the body and uric acid is a sub-product of it. I have suggested that in gout the uric acid was generally above normal, high in the blood during the time of acute manifestations, not so high but usually above normal in the subacute or more chronic types, although it might be normal down to 5 mg.; generally, the average in gout is about 7 and it may be as high as 17 mg. The

important point made was that if the uric acid of the urine was also estimated, it could be found that commonly when it was high in the blood it was lowered in the urine and that when it was high in the urine it was high in the blood and generally at that time there was an abatement of symptoms. I suggested that instillation of oxygen into the colon, probably by its effects on the liver, was the most valuable item in the control of the manifestations of this disorder.

SUMMARY

I have endeavored to review the more important conditions associated with liver damage and the direct or collateral effects upon the nervous system and other bodily tissues.

MENSTRUAL PURPURA*

EARL CONWAY SMITH, M. D.
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When one considers the many causes of purpuric rashes, it is no wonder that I have been hesitant in presenting this "symptom-complex" in relation to menstrual disturbances. In my eight years of practice of medicine, I have encountered five patients, each presenting symmetrical purpuric rashes of lower extremities coincident with, or apparently related to, the menstrual periods. Only two are presented in detail. The first case encountered caused me a great deal of anxiety, as well as the patient and all concerned, until a complete examination had been made which was necessary to eliminate essential purpura. Once having eliminated essential purpura, I was more at ease as to the prognosis but as for treatment, I was at a loss, since my search in literature failed to produce, at that time, more than one such case, and consulting more experienced clinicians did not assist me, since the cases recorded are so few, all consulted having denied ever seeing a similar case.

Even today it has been exceedingly difficult to find much literature on cutaneous hemorrhagic manifestations occurring at the time of, or related to, the menstrual cycle. Weitgasser and Cafasso[1], German physicians, report a case of menstrual urticaria hemorrhagica in 1924. Ellman and Weber[2] report a case of recurrent menstrual purpura in 1935. These are the only two cases in literature I have found almost to parallel the five cases in this series.

There are many reports on menstrual exanthemas but I wish to differentiate these manifestations from the bilateral, almost symmetric, purpuric rash of lower extremities which so clearly defines this series.

The following is a typical case, first observed and treated by me in 1930:

CASE REPORT

Case 1. The patient was a single girl, 18 years of age. She consulted me because of a bilateral red spotted rash on feet, legs and thighs. She began menstruating three days before onset of rash. The first two days the flow was much more profuse than usual but on the third day the flow became scanty, and it was following this scanty flow that the rash occurred. The scanty flow persisted for six days, and during this time, and for five or six days after, the rash persisted. The patient described her limbs as being "speckled" with a "red to purple" rash, the skin always remaining smooth, with a slight tendency, at times, to itch. The spots would not disappear on pressure. There was no pain.

Previous Medical History: Pertussis at six; measles at seven, tonsillectomy and removal of adenoids at 10.

Medical History: She began menstruating at the age of 12, always regular, three to four days duration, the first two days for past three or four months have been noticeably more profuse than before, the last two days more scanty. She becomes quite nervous during the periods.

General Condition: Height 5'2", weight 118 pounds, well developed, general appearance healthy. Temperature 98.6; blood pressure 114/90; respiration 20; pulse 88.

The thyroid was slightly palpable, symmetrical and soft. The breasts were well developed. The lungs, heart and abdomen were normal.

Genitalia: Hymen intact, but would permit digital examination which showed cervix and uterus somewhat smaller than normal.

Laboratory Data: Urine—Negative.

Blood examination: Red blood cells 4,670,000; white blood cells 7,000; hemoglobin 70 per cent (Talquist): N 54: LM 6: SM 38: E 2: platelets 175,000; bleeding time 2 minutes, 15 seconds:

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*Read before the Joint Session of the New Orleans' Gynecological and Obstetrical Society and French Hospital Staff, New Orleans, Louisiana, May 14, 1937.

coagulation time one minute, 45 seconds: blood calcium 9.6 mg.

The following is a brief resume of the last case to come to me for treatment:

Case 2. This patient was a married lady, 30 years of age. She consulted me because of a red to violet spotted rash around the ankles and legs; extreme nervousness and scanty menstruation since August 1936. The patient states specifically, that she was always regular in menstruation until August of 1936, the periods lasting from five to seven days with a normal flow. Since August 1936, each period lasts from one to two days and the flow is very scanty. One week before the menstrual period in January 1937, a red, spotted, rash began to appear around the ankles and within a few hours had spread over the legs to the knees. She described this rash as being perfectly smooth with the skin and the spots appearing from a red to purple to even violet in color, varying in size from pin point to one cm. in diameter. These large areas were more predominant in the regions of the ankles, and these large areas seemed to pale or fade in the center, giving some of them a circinate appearance. With the onset of the menstrual flow she was put to bed by her physician as the spots seemed to become more pronounced. She remained in bed for four days after the menstrual flow had ceased and the spots disappeared completely. There was an interval of about fifteen days during which time she was apparently well except for being extremely nervous. Four or five days before the next menstrual period, which was in February of 1937, the rash began to appear again, this time occurring just as it had done previously. The spots became more pronounced until the actual menstrual flow began and then gradually disappeared at the end of four or five days following cessation of menstruation.

Family History: Essentially negative.

Past Medical History: She had influenza several times; mumps, measles, whooping cough; cervical adenitis in 1935; sinus infection in December 1936; has had several sore throats in the past four or five years, the last one occurring in January of 1936. Appendectomy and tonsillectomy in 1926.

Menstrual History: Began at the age of 14; it has always been regular; duration of flow was five to seven days until August of 1936 and since then it has been very scanty and lasting one to two days, twenty-eight day type. She has never had profuse menstruation. The last menstrual period was April 24, 1937.

Inventory of Symptoms: At the time of the last three menstrual periods she seemed to be somewhat weaker than usual. There was no fever. She was unusually nervous and presented the rash on the lower extremities as previously described. She never suffers with headache; her eyes fatigue easily on reading but there does not appear to be any defect in the vision. She does not have any disturbances at all with her ears. There is no obstruction to either nasal passage; she occasionally must clear her throat to expectorate mucous that drips back into the rhinopharynx from the ethmoid sinuses. She has never had a nose bleed. The cervical glands at times are slightly enlarged. On excitement or exertion there is, at times, palpitation and tachycardia. Her appetite is good and does not present any gastrointestinal disturbances, except for being somewhat constipated. During the day she voids six to eight times; during the night there is no disturbance. She has never had any convulsions or paralysis.

Physical Examination: Physical examination reveals a well developed and well nourished female, aged 30, weight 130 pounds, whose normal weight is 120 pounds. Temperature 99.4 dropped promptly to normal in fifteen hours; pulse 86; respiration 20; blood pressure 120/60. She is extremely nervous and presents a purpuric rash on the lower extremities. The physical examination is essentially negative except for the lower extremities. Close observation of the skin of legs and feet reveals a generalized involvement of ankles and legs, more pronounced around ankles and lower half of legs, fading toward toes and toward knees, of a rash varying in color from red to purple and spots varying in size from pin point to that of a ten cent piece. The smaller spots remained as such, changing color from red to rusty red, purple, and larger areas to a fading blue, some clearing or paling at center resembling rings or circinate forms. The spots disappeared five to eight days after cessation of menses. Palpation of skin revealed the surface to be perfectly smooth and uninterrupted, the spots to be intracutaneous, and would not blanche or disappear on pressure. There was no edema in any area. At night, especially when the limbs were covered completely, due to increasing warmth, there was noticed a tendency to itching. It seemed quite evident from the above that in this series of cases the cutaneous manifestations are hemorrhagic in nature.

Vaginal Examination: Vaginal examination presents a normal vagina; apparently normal cervix; normal size uterus; right adnexa normal, the left tube seems normal, the left ovary, although not fixed, appeared to be definitely more painful to the touch than the right.

Laboratory Findings: Basal metabolism rate 5.7 per cent. Urinalysis normal. Blood examination: red blood cells 5,200,000: leukocytes 6,250;

SM 44, LM 8; N 48; platelets 217,000; hemoglobin 75: coagulation time 2 minutes, 50 seconds; bleeding time one minute, 40 seconds; blood calcium 10.6 mg. per 100 c.c. of blood. Blood chemistry: N.P.N. 24.9; urea nitrogen 12.4; uric acid 2.39; creatinine 1.4; dextrose 100. Blood Wassermann negative. Fragility test: Minimum .425; maximum .325; capillary test negative (arm band).

DIAGNOSIS

The following points are to be considered in establishing the diagnosis of menstrual purpura:

1. Occurrence of a distinct intracutaneous hemorrhagic rash, recurrent, during or related to the menstrual periods, usually more or less bilateral and usually limited to the lower extremities. Does not disappear on pressure.

2. The rash is usually associated with a scanty menstrual flow.

3. There is a definite decrease in the number of platelets, averaging approximately 200,000 per cubic millimeter of blood, without any noticeable change in the bleeding and coagulation time.

4. Other blood analyses do not present noticeable variations from the normal.

5. There has been a predominant nervous element in every case.

6. No tendency to spontaneous bleeding from mucous membranes. It is noteworthy to mention the age incidence of this series as varying between 18 and 30 years and that on the average one out of no less than every 500 patients presented the above symptoms.

DIFFERENTIAL DIAGNOSIS

(a) Essential Purpura. (Thrombocytopenic).

1. Spontaneous bleeding from mucous membranes and into any tissue.

2. Menstruation usually profuse.

3. Platelets usually decreased much below 100,000 per cubic mm. of blood. (In the cases I have examined they have numbered less than 50,000).

4. Marked prolongation of bleeding time.

5. Coagulation time only slightly prolonged.

6. Degree of anemia greater, but depends on amount of blood loss.

7. Purpuric rash not related to menstrual periods and may occur on any part of body.

Minot[5] reported a case of intermittent menstrual purpura hemorrhagica in 1936, but this case can be easily eliminated by bearing in mind the points to establish a diagnosis of menstrual purpura.

(b) Erythema Multiforme.

An acute inflammatory disease presenting macules, papules, nodules, and sometimes, vesicles and bullae, which usually occur on extremities, upper or lower or both. Lesions are bright red in color, annular, disappearing on pressure, and may assume a dark or purple color. They are not hemorrhagic from the onset, are not altogether macular, and are inflammatory.

(c) Dermatitis Dysmenorrheica:[6]

The changes in the skin are serous exudations with superficial necroses which heals underneath crust formation with or without scarring or pigmentation. The distribution is usually symmetrical, and usually occurs on face, but may occur anywhere except hairy regions. The rash may coincide with, or occur independent of menstrual periods, but observed only in patients with dysmenorrhea. The lesions subside after the abnormal genital function is corrected.

(d) Erythema:

Morbid redness of skin may occur in diffuse or circumscribed areas usually on cheeks, forearms and thighs.

(e) Acne:

Small, pink, papules, or pustules may occur on face, back and chest, especially at puberty.

(f) Ecchymoses:

Areas of extravasation of blood, causing bluish discoloration of skin, not unlike that caused by contusions, may appear on chin, lips, face, thighs and at times on legs, usually one or two areas is all that is seen at a time.

(g) Herpes:

Small vesicles, in clusters with crust formation, that are very painful, may occur on genitalia, face, lumbo-sacral region, buttocks and thighs.

(h) Urticaria:

Smooth, elevated patches or areas, which are usually whiter than the surrounding skin, and may be rose color, attended by severe itching, may occur on any part of the body. May

be due to menstruation, emotional, or some gastrointestinal disorder.

(i) Angioneurotic Edema:

Edematous patches arising as result of vasomotor disturbances, most usually seen at menopause. Most commonly occur on lips, eyelids, face, hands, and rarely, vocal cords.

TREATMENT

Treatment is directed along the following lines:

1. Rash. The rash is considered first because this is the primary reason the patient consults the physician. Whole blood, 10 to 20 c.c. is given intramuscularly every day for four days, then every other day for four times which usually suffices for disappearance of the rash but in the event the rash has not completely disappeared at this stage, twice weekly should be sufficient. Locally, calamine lotion (U. S. P.) applied as a liquid powder or carbolized vaseline applied three or four times in 24 hours will relieve the itching. As a general rule, however, this itching is of minor importance. Rest in bed is absolutely essential until rash has disappeared.

2. Establishment of a normal menstrual flow is the most important. To establish a normal menstrual flow, in 1930, in presence of a normal blood picture, I knew of only desiccated thyroid to prescribe. This had its disadvantages in that it frequently causes headaches, loss of weight, and was unreliable, but when prescribed in individualized doses, it still remains as one of the most proficient drugs.

The next seven years unfolded much knowledge previously unkown, in the endocrine field. As a result, I find the best routine for the establishment of a normal menstrual flow for such cases, is as follows:

(a) Supplemental therapy, based upon hypofunction of the ovaries, by use of theelin and corpus luteum extract. During the first fifteen days of the intermenstrual period, theelin is given every third day to produce primary congestion of the endometrium. From eighteenth to twenty-fourth day corpus luteum extract is given every day to produce actual hemorrhagic secretion of endometrium. Usually a normal menstrual flow occurs about the twenty-ninth to thirtieth day of the intermenstrual cycle. If it does not, then it is best to repeat the entire process one or two more times. If, after the above procedure has been followed, normal menstruation fails to occur, one would feel that:

(b) Stimulation therapy by use of anterior pituitary gonad stimulating hormone is indicated.

Feeling, then, that the anterior pituitary lobe has failed to supply sufficient stimulus to proper development of follicles with subsequent development of endometrium, the following plan is therefore suggested:

Theelin is used in the first fifteen days of the intermenstrual cycle, as above indicated in (a) then using anterior pituitary gonad stimulating hormone for eight to ten consecutive days, begin about the eighteenth day of the intermenstrual period.

At times I have felt inclined to add small doses of desiccated thyroid two or three times daily to aid further in establishing the endocrine balance by raising the basal metabolic rate.

I have never found it necessary to continue the above routine longer than three complete intermenstrual periods. Prolonged and continuous estrin therapy may lead to endometrial hyperplasia or inhibit pituitary activity[4].

3. Nervous phenomena. This can be overcome by assuring the patient and all concerned, of a happy outcome, for they usually think the disease is essential purpura and that there is little or no hope for cure. Drugs that are likely to produce a rash are contraindicated. Luminal is recommended but it is not necessary to continue it longer than three or four weeks, for I believe that the corpus luteum extract acts favorably to suppress the nervous phenomena exhibited in these cases in a similar manner as it does to suppress the nervous vasomotor phenomena that occur during menopause. Calcium may be of value.

4. Foci of Infection: A careful search for foci of infection should be made and all eradicated as soon as the condition of patient permits.

5. General well being of patient is concerned with proper sleep; freedom from worry and mental strain; proper digestion of whole-

some food at regular intervals; overcoming constipation; alcoholic beverages, tobacco, tea, coffee, and spiced foods, are forbidden.

Stiller[3] in 1877, Schramm[3] in 1878, looked upon skin eruptions during menstruation as being brought about in some reflex manner by menstrual phenomena. Pauli[3] in 1880 observed eruptions in amenorrhea and considerd them to be a species of vicarious menstrual manifestations.

Menstrual purpura should not be considered as typical vicarious menstruation since the intracutaneous extravasation of blood does not completely replace the monthly menstrual flow.

Deposition of pigment in the skin (breasts and face principally) during pregnancy, the growth of hair about the genitals at puberty, all indicate that the function of the reproductive organs is linked in some way with the activity of the skin[3]. Gynecologists and obstetricians are continually encountering various skin conditions in association with the menstrual function.

It is interesting to note that in all of these cases the purpuric rash became demonstrable after a distinct decrease in the menstrual flow became evident. Modern thought of the role of the internal secretions in the causation of menstruation tells us that the skin eruptions are in some unknown manner brought about by the action of these internal secretions[3] either from the ovary or of other internal secretory glands. With the normal menstrual flow, the function of the internal secretory organs seems to be fairly well balanced. But with a derangement in the endocrine chain allowing scanty menstrual flow, certain hormone (s) or toxin (s) accumulating and circulating in the blood stream, acts on the capillary walls causing a tendency to increase parenchymatous oozing as do some drugs (ethylene and arsphenamine) without actually causing noteworthy change in the coagulation and bleeding time.

It is also interesting to note that some individuals offer a natural hypersensitiveness to certain circulating hormones, or toxins (or proteins) but inasmuch as these cases, of this small series, have responded very well to therapy directed to establish a normal menstrual flow (hypo-ovarianism), it seems that a derangement in the endocrine mechanism is most logical.

CONCLUSIONS

1. This brief of five cases of menstrual purpura is presented to indicate a "symptom-complex" rather than a definite clinical entity, for, although the last three cases responded to the plan of therapy outlined, without any recurrence to date, there is much yet to be known of the pathogenicity and treatment of the underlying endocrine derangement, or its definite relationship to an allergic phenomenon.

2. Although the plan of therapy outlined did indeed benefit this small series of cases of scanty menstruation, one should be ever cautious of prolonged estrogenic therapy in more severe forms of endocrine disturbances in which menstrual derangements present predominant symptoms.

3. If this brief does nothing but to stimulate reports and further study of similar cases, it will have fulfilled its purpose because of the rarity of similar cases in literature.

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DISCUSSION

Dr. James K. Howles, (New Orleans): Dr. Smith is to be complimented on this excellent presentation of such an unusual cutaneous manifestation. The distribution of these lesions and their occurrence would seem to necessitate the elimination from a diagnostic standpoint, a toxic dermatosis, probably of the erythema multiforme group. Frequently one finds such an eruption limited to the areas just described by the essayist. The elimination of erythema multiforme seems even more necessary in view of the normal blood findings in this case, which, while possible, are indeed unusual in the late cutaneous eruptions associated with blood dyscrasias.

The essayist stated that focal infection had been ruled out. I was glad he mentioned that point, as abscessed teeth, sinuses and tonsils are so frequently associated with the purpuric eruption and probably play a role in their etiology.

I am invariably reminded of the petechiae of the skin which are found early in bacteremia and septicemia, such as meningococcic meningitis, when I see a purpuric eruption and firmly believe that coccic foci should be thoroughly searched for in such cases.

Regarding the autohemic injections, that particular form of foreign protein therapy is quite useful in most toxic dermatoses. It is a safe and relatively mild form of foreign protein therapy. In discussing it with students I usually compare the reaction to that obtained by extravasation of blood into the periorbital tissues in cases of ecchymosis caused by trauma to that area, such as a black eye.

While I am aware of the rarity of this condition I wish Dr. Smith would try, on his next case, administering merely the autohemic injection and purposely omitting the supplementary therapy to see the results which, if favorable, would tend to confirm the toxic etiology.

Dr. Smith, (In closing): The few cases recorded of this type do not permit of much argument toward establishing a definite clinical entity. It is true that erythema multiforme must be considered but I believe this can be eliminated by referring to the points that characterize this group.

The use of the blood injections is primarily to cure the rash promptly and has nothing to do with establishing a normal menstrual flow, this being done by the endocrine therapy outlined. No recurrence of the rash has been noted after normal menstrual function was established.

TOXIC EFFECTS OF CARBON DIOXIDE*

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Sir James Simpson in one of his papers in 1856 said, "Carbon dioxide is usually recognized by toxicologists as a very powerful narcotic poison when inhaled in sufficient quantity." He pointed out as a practical proof of this statement the following situation. The walls of the Grotto del Cane near Naples are said to emanate steam and carbon dioxide in sufficient quantity to form a stratum of carbon dioxide near the floor, in which dogs are either anesthetized or thrown into convulsions and finally asphyxiated, while their masters, breathing the lighter, purer air above, are unaffected.

It is my desire to call to your attention a condition which is all too rarely appreciated by present day clinicians. For want of a better name, it may be referred to as carbon dioxide poisoning. An anesthetist's interest in the subject is perhaps logical, since many, if not most, of his difficulties with inhalation anesthesia originate from interference with the normal transport of oxygen, carbon dioxide, and the anesthetic agent to and from the cells of the central nervous system. A knowledge gained through an experience of over twenty years as an anesthetist, leads me to discuss the subject. To illustrate the fact that carbon dioxide may be a poison, the following extract from a letter written by a former undergraduate student bears witness. He writes:

"The patient was a well developed girl of fifteen who entered the hospital with a chief complaint of tenderness localized at McBurney's point. Her temperature was 101.8° F., her pulse was about 85, and respirations 20. Chest examination was negative. An appendectomy was advised. To produce anesthesia, I employed nitrous oxide induction followed by ether, with the absorption technic. The machine did not absorb carbon dioxide very well at any time. The anesthesia was well established with ether, and the operation begun, the patient having excellent color, respirations about 26, pulse 90, pupils small and extrinsic muscles of the eyeball paralyzed, when she began to have small constant twitchings of the face. A short time later there appeared a small clonic body convulsion. I thought of anoxemia as a cause even though respirations were not depressed, pupils small, pulse good and color good. Oxygen was administered, ether was deepened, then abandoned, then reapplied and various other procedures tried in an attempt to relieve the situation. These efforts included giving a lot of carbon dioxide because of possible alkalosis. The convulsions continued, getting steadily more violent, her pulse rose to 120, and her temperature obviously increased. A half hour after the onset of the convulsions she died. This case has been widely

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discussed among our hospital staff members, and no adequate explanation offered. The surgeon says it was a case of too much ether, our anesthetic technician believes it to have been anoxemia, and the pathology department, after a complete postmortem examination including the brain, concluded that it must have been asphyxia, largely because of essentially normal findings."

In answering the letter, his attention was called to former instruction in regard to the toxicity of carbon dioxide, referring to his own statement that the apparatus used "did not absorb carbon dioxide very well at any time," that the patient was exactly the type likely to be hypersensitive to carbon dioxide, and that this gas had actually been used to treat his patient after toxic manifestations had begun. The reply in part was as follows:

"Yes, I should have known better about the whole matter. I now remember how, just before the patient expired, I had given her a constant stream of oxygen by way of the direct shunt valve, hardly having her rebreathe any exhaled gases, because that seemed to be the only thing which kept her at least partially from failing."

He then adds a case report which illustrates the toxic qualities of carbon dioxide in other than anesthetic circumstances.

"Early this morning, I was called to the ward to see a premature infant that was blue and hardly breathing in spite of a steady stream of carbon dioxide 5 per cent and oxygen 95 per cent or carbogen. It gave occasional twitching gasps. This time I recognized carbon dioxide toxemia, so gave lots of pure oxygen at once, and the infant rapidly improved. After being given some saline subcutaneously and one-half hour of pure oxygen, it was crying lustily and in good condition. It seemed spectacular to the nurses how oxygen, not carbogen, was effective.

"In this hospital, I have been able to count fifty carbogen cylinders and only two oxygen cylinders available for therapeutic purposes."

If this man's experience was an isolated instance, it would be of little significance. On the contrary, his letter is one of many received in my office describing fatal and non-fatal cases of carbon dioxide poisoning. It is my belief that atmospheres containing excess carbon dioxide are frequently toxic and often fatal to certain individuals. If illness has interfered with normal metabolism, or if the transport of this waste product from the cells of the body to the environmental atmosphere is handicapped by biochemical abnormality, by respiratory or cardiac deficiency, or by drug effect, any increase in the tension of carbon dioxide in the atmosphere inspired may prove detrimental.

EFFECT ON NORMAL SUBJECTS

A brief and incomplete review of the literature will refresh our minds as to the effect of carbon dioxide rich atmospheres on normal animals and men. Statements of Haldane and Smith in 1892[1] have frequently been verified that ten per cent carbon dioxide in the inspired atmosphere is the upper limit which can be inhaled for any length of time without stupefaction. This fact had been demonstrated in animals long before 1892. It is, of course, a familiar fact that Hickman advocated surgical anesthesia with this agent during the first quarter of the nineteenth century[2]. Davies, Haldane and Kennaway in 1920[3] found that the inhalation by normal individuals of 5.2 per cent to 6.4 per cent carbon dioxide for two hours was followed by headache lasting for several hours after its removal.

Goldstein and Dubois[4], in 1927, studied the effect of carbon dioxide inhalation by normal individuals. They demonstrated that when the inspired air contains less carbon dioxide than alveolar air, that is, up to 5 or 6 per cent, there is no increase in alveolar concentration. In other words, normally the increased ventilation is able to keep down the alveolar concentration so long as the atmosphere inhaled does not contain an excess over the normal alveolar carbon dioxide. As the level of alveolar tension is reached and exceeded, in the inspired air, the alveolar tension gradually increases until it approximates that of the inspired atmosphere at the end of the experiment. They found that there is a rise in systolic blood pressure with increasing concentration. The extent of the systolic rise, they found to be dependent on the ability of the subject to continue to rebreathe, reaching 60 millimeters and higher before their conscious subjects refused to continue. They also observed a rather extreme change downward and then upward in the diastolic pressure just following the period of inhalation.

In 1929, Leake and I[5] reported investigations

of the effects of carbon dioxide in which mixtures of this gas with oxygen were utilized to induce anesthesia in dogs. We found, as had many others, that the extreme rise in blood pressure took place with concentrations under 30 per cent, whereas with 30 per cent and over, after the initial rise, the blood pressure often remained approximately normal during periods when there were no convulsions, and that respiration likewise tended to be normal or depressed. As concentrations above 40 per cent were reached, there was definite depression of both respiration and circulation. When a gradual increase in carbon dioxide concentrations to very high levels was displayed to dogs, it was found that both respiration and circulation finally ceased approximately at the same time, rather than in the sequence usually noted with anesthetic agents; namely, a cessation of respiration long before the heart stops. The outstanding finding of their work, however, was the frequent occurrence of convulsions in their animals at some period either during or following the carbon dioxide inhalations. We then attempted to administer 30 per cent in oxygen as an anesthetic agent to three apparently normal women, with the following result. The first was satisfactorily anesthetized for thirteen minutes with no untoward result during inhalation. The second had a convulsion on the operating table, during which the ward nurse appeared in the doorway to ask, "Doctor, what shall I do? The first patient is in a convulsion." The third patient tolerated ten minutes of carbon dioxide anesthesia, which was then changed to nitrous oxide. That evening, none of the three appeared to be the worse for the experience.

Brown in 1930[6] studied the physiologic effects of concentrations between 5.5 and 12.4 per cent in the inspired air of normal men. He found that when his men began by the inhalation of 10.4 per cent, the maximum period which this could be endured without severe alarm, either by the man himself or by the observer, was two and a quarter minutes. When inhaling an atmosphere of 12.4 per cent, the maximum period was two minutes in one individual only, the others abandoning the effort much sooner. Brown was convinced that 10 per cent was the maximum concentration which could be inhaled for longer than ten minutes by any individual without loss of consciousness. He noticed, as had many others, that the respiratory rate when inhaling excess carbon dioxide was only slightly increased, the depth greatly increased, and the pulse rate moderately increased. He made the following observations in regard to the increase of minute-volume respiration as determined by measurement of the expired air: 6 per cent CO_2 caused 203 per cent increase in ventilation; 7½ per cent CO_2 caused 225 per cent; 8.8 CO_2 caused 228 per cent; 10.4 CO_2 caused 279 per cent; 12.4 CO_2 caused only 153 per cent.

The sudden decrease in respiratory stimulation above 12 per cent is significant. The influence of high and low oxygen tensions accompanying the carbon dioxide inhalation was carefully checked and found not to affect the results.

In both subjective and objective effects, all workers have found extreme individual variations. Alarming symptoms appeared early in one individual, while the same concentration was tolerated by other individuals. It is evident from the above and other experimental work that excess carbon dioxide inhaled by normal individuals causes hyperpnea, distinct and progressive increases in systolic blood pressure and other alarming signs and symptoms, both subjective and objective, until concentrations above 10 per cent (higher in some animals) are reached, when unconsciousness uniformly occurs. Depression of both respiration and circulation eventually supervenes as the tension is increased. Inhalations of variable concentrations have, in our own hands, frequently been followed by convulsive manifestations.

In all the preceding experiments, the writers have referred to an extreme variability in the reactions found in different normal individuals, both animals and men. This brings up the question as to whether certain diseased states may not have a very definite influence on the sensitivity to the toxic effects. The mechanism by which this catabolic product is eliminated from the body is well recognized to be a complicated one. Within the last ten years, the whole theory of carbon dioxide trans-

port has been revised and is still far from solved. There is, however, evidence here and there in the literature that the effect of diseased states may result in modifying still further individual variability. I have previously referred to the dangers which may accompany rebreathing or the administration of carbon dioxide to persons who are ill[7, 8]. Many references could be cited of cautions and warnings by clinicians in regard to excessive use of carbon dioxide. Lundy in 1925[9], in a paper advocating the value of this agent as an adjunct to inhalation anesthesia with ether, says, "From time to time the anesthetist should open the exhalation valve and smell the mixture in the bag. The odor of ether in the bag should never be stronger than the anesthetist himself can tolerate, and the carbon dioxide should never be discernible." In the same paper he says, "Too much carbon dioxide is worse than none and care should be exercised to prevent more than 5 per cent being used. The absorption and dissociation curves of blood and tissues have been found by Peters[10] to vary under certain circumstances. In 1920, he studied the absorption curves and carbon dioxide tension in the blood of normal persons, and those suffering from cardiac dyspnea and from severe anemia. He concluded that, in cardiac dyspnea, there was an impairment of the mechanism for giving up carbon dioxide from the blood; and that in severe anemia, there was a diminished power of absorbing and dissociating carbon dioxide with retention in blood and tissues. In many diseased states, it is reasonable to suppose that further deviation from normal physiologic reactions may result from inhaling even moderately increased tensions.

Since the physiologic mechanism involving the elimination of carbon dioxide is incompletely understood at the present time, it is scarcely worth further consideration in a clinical paper. Certain clinical facts, however, may be enumerated.

HYPERSENSITIVE INDIVIDUALS

In my experience, some infants and children and occasional adults, toxic from acute infections, from dietary deficiency and from other causes, are often hypersensitive. Extremely hot weather, starvation and dehydration have at times seemed to result in greater susceptibility. The toxic manifestations cannot be correlated with a definite concentration of carbon dioxide in the inspired air. Physical signs of harm may occur soon after rebreathing has been instituted, after a half hour or longer of inhalation of carbon dioxide-rich mixtures, or in the period following exposure to such environment. The majority of patients tolerate excess carbon dioxide in their inspired atmosphere, apparently without harm. For this reason, it is all the more important that we be cognizant of the hypersusceptibility of the few if we are to prevent fatalities.

The physical signs which we have come to recognize as related to carbon dioxide disturbances are of two types. First, there is a group of signs in general simulating collapse. The patient may be pale with depressed respirations, often of a quick gasping type accompanied by a grayish pallor. Blood pressure is low, often without a correspondingly rapid pulse rate. Continuance of carbon dioxide administration under such circumstances may fail to produce hyperpnea and result in arrest of respiration. Free breathing without carbon dioxide, by artifical respiration if necessary, is indicated, together with parenteral fluids, oxygen, and external heat.*

The second more common evidence of the effect of excess carbon dioxide is shown in muscular activity. If, under conditions permitting accumulations in the body, the smaller facial muscles begin to twitch, the observer should think of carbon dioxide poisoning as well as of oxygen lack. Excess carbon dioxide in the inspired air should cause increased breathing. Lack of this effect should make one suspicious of toxicity. When facial twitching is first noted, immediate effort should be made to promote elimination. When action is prompt, no further treatment will be necessary. If the

***A somewhat similar picture may appear directly following a period during which an individual has been subjected to an atmosphere too rich in carbon dioxide and must be differentiated from it. It is then probably due to the sudden withdrawal of excess carbon dioxide for which adjustment of the buffer mechanism of blood and tissues has been made. Perhaps the excess carbon dioxide has been blown off more rapidly than it is possible for the buffer mechanism to keep pace.**

facial movements are disregarded, a more or less generalized mild convulsive manifestation may follow. * Even then, elimination of the carbon dioxide from the inspired air will, if the patient continues to breathe, rectify the physiologic disturbance in a majority of cases. Other than the elimination of dead space (rebreathing) and the omission or termination of carbon dioxide therapy, the most logical treatment is the intravenous administration of buffer salts, preferably in hypertonic solution. Barbiturates, intravenously, will stop the convulsion whatever its cause, but if it is due to excess carbon dioxide, such therapy is fundamentally unsound because of the accompanying depression of respiration. Deep ether anesthesia will not remedy the condition and often makes it worse Any therapeutic procedure is useful that will cause interruption of the ill-chosen technic that has resulted in overdosage. In anesthesia, if contemplated treatment results in the removal of the face mask, the patient gradually expires the gas and recovers. On the wards, patients may not be so fortunate. The administration of a mixture of carbon dioxide and oxygen may be continued in a futile and fatal effort to stimulate a respiratory center already depressed with excess carbon dioxide. Unfortunately, the persistence of a pink color often deceives the physician.

I recognize that there are many causes of convulsions and collapse, unrelated to carbon dioxide. I merely wish to leave the appreciation that illness may so modify physiologic processes as to make a slight increase in the carbon dioxide tension of inspired air toxic to occasional individuals. Realizing this fact, the physician will be on his guard to prevent the injudicious application of such therapy. The one legitimate therapeutic use of carbon dioxide which has been accepted by all physiologists and clinicians is to increase respiratory exchange.* When carbon dioxide therapy, or the rebreathing of expired atmospheres, is practiced and no increased breathing occurs, take warning. Under no condition of abnormal physiology does nature so quickly restore herself as in the elimination of excess carbon dioxide. On the other hand, if therapeutic endeavor curtails elimination by maintaining a dead space for rebreathing or by adding carbon dioxide to the inspired air from a cylinder, a fatality may result.

***When the mechanism of carbon dioxide transport and excretion is better understood, it may be found that excess is toxic solely by reason of its tendency to interfere with oxygen acceptance by the cells. Stated in another way, excess carbon dioxide may reduce the availability of oxygen for cell utilization. The differentiation of muscular twitching or convulsions due to too much carbon dioxide from similar manifestations resulting from lack of oxygen is not always easy. The absence of hyperpnea, when it should logically be present, is often an aid in differentiation. There is some evidence that excess oxygen accompanying excess carbon dioxide actually increases the probability of toxic manifestations.**

CONCLUSIONS

1. Normal response: When the air inspired by normal individuals contains carbon dioxide in excess of that in alveolar air for any length of time, extreme circulatory and respiratory stimulation takes place, later followed by depression of these functions, by unconsciousness and often by convulsions. Normal individuals vary over a wide range in the symptoms and signs caused by a fixed tension in the inspired air.

2. Pathologic states accompanying illness may handicap in the extreme the potential power of buffer adjustment designed to maintain a normal balance of carbon dioxide in the tissues and provide for sufficient elimination of this substance.

3. In a vast majority of cases, the only therapeutic value of the inhalation of carbon dioxide is the production of increased pulmonary ventilation. When hyperpnea does not result from carbon dioxide inhalation, the administration should be promptly terminated.

4. In addition to absence of hyperpnea, other signs of carbon dioxide toxicity are characterized by collapse in certain circumstances and in others by twitching of the small muscles of the face, followed by convulsions.

***Rarely in modern medical practice does one encounter a patient depleted of carbon dioxide because he has breathed too deeply.**

5. Treatment of carbon dioxide poisoning consists mainly in providing a free airway with pure oxygen or air (no carbon dioxide) as a respirable atmosphere. If respiration is depressed or arrested, brief artificial respiration, without dead space or rebreathing, may be necessary.

6. Buffer solutions and depressant drugs intravenously are of benefit but are seldom needed if the condition is recognized early.

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This editorial is addressed to the secretaries of the Parish, District Societies and hospital staffs of the State of Louisiana. The Journal Committee has appealed to all secretaries before by personal letters and by word of mouth, asking them to send in to the Journal news items about their particular organization. In response tc letters sent to the secretaries of the above organizations last November, three or four cooperated well in sending to the Journal information as to what was going on in their groups. This represents a very small percentage of the organizations to whom this request was sent.

The Journal is the official organ of your State Society and its constituent divisions. As the secretary of any of these divisions of the State Society it should be part of your function to keep the Journal informed about news matters in your Society.

The state Journal should be not only the recorder of the scientific presentations given before the State Society and before other branches of the organization but it also should contain a considerable amount of local news. There is no possible way of obtaining this news except from one of the doctors in the district, and the logical doctor should be he who is honored by election as secretary to his society. The doings and the happenings that take place from time tc time in a parish society are of interest not only to the men intimately connected with the parish but to the friends of the members throughout the state. They are interested in knowing what Dr. Blank is doing, or how the parish society is functioning, or what the local hospital is doing at its monthly meeting. News items such as these add materially to the state Journal, but they cannot be obtained unless some one man will have sufficient interest in his local affairs to report them to the editor of the Journal.

The Journal Committee is extremely anxious to have the cooperation of the members of the organization; it feels that its Journal can be made more readable and of greater interest than now if it can record what is being done throughout the state by the physicians of the State Society. The Committee is desirous of publishing a journal which will be warmly greeted the first of each month.

It is earnestly urged that you, as secretary of your local society or hospital or staff send to the Journal such news items as you may be able to obtain before the twentieth of the month in order that they may be incorporated in the Journal that will appear ten days later.

SOME NOVEMBER MEETINGS

During the latter part of November there will be held in New Orleans several meetings of general interest to doctors of the State Med-

ical Society as well as to physicians in neighboring states. The first of these will be a series of clinics and demonstrations one week before the Southern Medical, given under the auspices of the Medical School of Tulane University. As part of this program there will be incorporated on November 22-23 a Tuberculosis Institute which will be given in collaboration by the Orleans Parish Medical Society, the Tuberculosis Committee of New Orleans and the Louisiana State Tuberculosis Association. Following this meeting the Southern Medical will start on Monday, November 29. These meetings will give ten days to two weeks of intensive medical work which should be well attended.

Preliminary announcements of the Clinics and Demonstrations and the Tuberculosis Institute will be found in the section devoted to the Louisiana State Medical Society and the Orleans Parish Society.

I. I. LEMANN

The sudden and tragic death of Dr. I. I. Lemann terminated the career of one of the best known physicians in the city. Lemann had been intimately connected with New Orleans' medical and social activities the greater part of his life. A member of a prominent Louisiana family, Lemann in his early life migrated to New Orleans where he obtained his education except for a year spent at Harvard. He early became identified with the Charity Hospital and with Touro Infirmary and in both of these institutions he still kept his connection at the time of his death. At Charity Hospital he was made a consulting physician after years of active work. At Touro he was head of the medical service. Lemann was known to a large number of Tulane graduates who, at some time or another in their course, had the opportunity of obtaining his sterling instruction. He was a member of several of the elect national medical societies. He was known all over the country for his work in diabetes and for his interest in the diabetic.

Lemann was socially minded to a high degree. He was interested in the welfare of the poor people of the city and he was active in furthering their interests. He was also interested in advancing the negro and he did much to promote the education of the negro physician.

Lemann's death is a loss not only to the medical community and to Tulane Medical School but also a loss to New Orleans as a whole and more specifically to those New Orleanians who were his devoted and grateful patients.

MIGRAINE

A short time ago it was pointed out that pruritus ani is one of those minor ailments which cause the patient a great deal of distress and which sometimes is very difficult to cure. Another disorder at the other end of the human body, namely migraine, is one with which the patients may be troubled all their lives and obtain very little relief from physicians. One of the reasons for this, of course, is that there has never been any etiologic agent definitely incriminated in the causation of these headaches. They apparently are due to a variety of causes. As pointed out by von Storch[1], the condition apparently has a multiple pathogenesis but a common mechanism, the result of various underlying pathologic processes. Some of the hypotheses concerning the etiologic agents include such factors as toxic vasomotor substances, endocrine imbalance, oculo-cerebral reflexes, allergic disturbances and what not.

The migrainous headache has associated with it certain features. It is usually, but not necessarily, limited to half of the head. Visual symptoms, such as scintillating scotomas are common. The onset is frequently characterized by nausea and vomiting, and the severe visual symptoms, plus the extreme head pain, are at times enough to incapacitate the patient for hours or even for several days.

One of the interesting developments in therapeusis in the last few years has been that which has to do with the curing of this syndrome with ergotamine. Originally employed with a definite purpose it has been shown that the hypothesis upon which its use was based was incorrect but the drug was empirically discovered to be of immense value in the relief of the head pain and the other symptoms. A

1. von Storch, T.J.C.: The migraine syndrome: Comments on its diagnosis, etiology and treatment, New Eng. J. Med., 217:247, 1937.

possible explanation of the curative action of this drug is that of Wolff who has shown that this drug, in therapeutic doses, constricts the temporal and middle meningeal branches of the external carotid artery but has little or no effect upon the main branches of the internal carotid. It is possible the remedial action may be due to active vasoconstriction of the dural and temporal vessels, relieving the headache in some not yet definitely proved manner. Von Storch reports on more than 200 selected patients who had the migraine syndrome developing as result of multiple factors. Ergotamine was given to these patients in various sized doses with superb results. He recommends from 1-5 mg. of ergotamine tartrate by mouth, followed each hour by 1 to 2 mg. not to exceed a total intake of 10 to 12 mg. In the more severe cases the hypodermic injection of ¼ to ½ mg. is usually effective in 15 minutes to three-quarters of an hour. Other methods of administration are useless and daily preventive dosage has been shown to be of little value. To relieve the nausea and vomiting atropine is probably the most satisfactory drug.

The use of this medication represents a real relief to sufferers who have had the agony of migraine most of their life. It does not work in every instance, needless to state, but to the great majority of patients it does afford a temporary cessation of their discomfort and a symptomatic temporary cure. It hardly seems necessary to add that the drug is contraindicated when there is coronary or peripheral vascular disease of the obliterative type.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

J. T. NIX CLINIC
NEW ORLEANS

At the meeting held in September Doctor J. A. Gaudet presented the following paper:

THE ORACULAR BLOOD CELLS

One of the most potent aids, and the commonest, except for urinalysis, in the armamentarium of the medical man is the blood cells and the manner of their reactivity to an affront. Both quantitative and qualitative variations occur, the latter presenting, by consensus of authoritative opinion, by far the more consequential data. It has been said, "I would emphasize again and again that if any one count is to be made it should be the differential,—there are few pathological conditions upon which it does not throw important light[1]". It is true in a general way that quantitative values are an expression of the character of an invasion, yet, after all, a random aliquot of blood bears only an insight into the quantum of the aggregate and many factors, both extrinsic and intrinsic, veer them to actual inaccuracies; furthermore, occurrences of a sluggishness or failure of the defensive mechanisms present wherein absolute results do not pace the intensity of the invading process. Apropos to the leukocytes, fluctuations of certain varieties (monocytes, eosinophiles), could hardly register since their original incidence is so low, and again, it was long ago observed that good resistance might react to light injury by an effusive reply and, vice versa, that poor response might reply to a severe process. The attitude of today is to regard quantitative expressions as largely questionable and often misleading when considered alone, but as being usable in the formulation of indices or as one of a series.

Primarily, the distinction of erythrocyte and leukocyte offers; either reacts independently of the other, and the numerically minor cell, the leukocyte, is the major cell from the diagnostic viewpoint. The erythrocytes, 500 to 1,000 times in the majority, tend to constancy; so that usually a knowledge of their hemoglobin content and their tinctorial and morphologic characteristic suffice to reveal their systemic caliber. Polycythemia (their increase) is unimportant[2] and relative, and oligocythemia (their decline) and oligochromemia (reduction of hemoglobin) occur together but not always to the same degree. Normally circulating they evince as homogeneous discs, showing monochromatic (acidophilic or eosinophilic) staining affinities and a general similarity. Abnormally, deviations present which are typical of some particular condition; their hemoglobin content declines (achromatic "pessary forms"); their size and shape change (anisocytosis and poikilocytosis); their tinctorial characteristics assume peculiar traits (polychromatophilia and "punctate basophilia"); and their structure displays untimely conformations and unusual manifestations (erythroblastosis, reticulocytosis and fragility).

The leukocytes, normally ranging in a "rhythm" within limits of 4,000 to 9,000 cells per cu. mm. of whole blood[3], are vividly reactive; their abnormal presentations yield the brunt of helpfulness exhibited by blood cell examinations. Leukopenia[4] (their absolute decrease) is not of such practical utility, occurring in severe infections wherein the

body defenses have been overwhelmed; in conditions as typhoid, paratyphoid and undulant fever, early tuberculosis and influenza—all separate of coccal involvement—in malaria, measles, mumps; in agranulocytic angina; in established anemias; in poisoning by benzol, lead, radium and roentgen ray; and in certain physiologic states as malnutrition.

But leukocytosis, using the term to include transient, chemotactic and absolute increase of any variety of leukocyte is common and of unique import. Chemotactic agents that occasion the leukocytoses are critical, that is, certain ones call forth a particular white cell variety and are repellent or neutral to another, and it is unusual for more than one variety to be simultaneously similarly affected, so that the seasoned hematologist is able to approximate the process set up by studying the leukocyte reaction. In a large majority of instances the polymorphonuclear (P M N) neutrophile is the selected respondent, and the response is typically immediate, active and florid; it has been likened to the mobilization and dispatch of soldiers for first line defense service. Coccal infections are almost wholly responsible. Minor causative agents are malignant conditions (50 per cent of malignancies), postoperative states, posthemorrhagic conditions and toxic and drug induced states; and there is a large group of responses produced by physiologic conditions such as physical exercise, mental activity, digestion, or pregnancy, so called neuro-vegetative reactions.

A typical neutrophilia from our files is cited for purposes of illustration. Total leukocytes, 16,750; neutrophiles, 80 per cent.

Neutropenia (the absolute decrease of neutrophiles) is the usual type of leukopenia and has been above discussed. Example: agranulocytic angina—total leukocytes, 1,000 with 15 per cent neutrophiles.

Lymphocytosis (lymphocytic leukocytosis) implies an absolute increase of lymphocytes, and percentage or "relative lymphocytoses" are probably instances of neutropenia. Marked augmentation occurs in three conditions only; lymphatic leukemia, whooping cough and infectious mononucleosis (glanders), examples of which are: Lymphatic leukemia, total leukocytes, 90,000 with 95 per cent lymphocytes; whooping cough, total leukocytes, 30,000 with 70 per cent lymphocytes; infectious mononucleosis, total leukocytes, 15,000 with 80 per cent lymphocytes.

Milder increases have been ascribed to bacillary infections, states of hyperactivity of the ductless glands and lymphatic tissues and anemias, chronic and subacute conditions of subdued nature. Today conservatism is exercised towards "lymphocytosis"; since normal variance has been found to be quite wide, percentages as low as 15 and as high as 65 have been noted in healthy adults, and Osgood[5] reports 48 and 38 averages for children and adults, respectively. Children, during the first year, present about 55 per cent of lymphocytes which, gradually, approaches normal adult values after the eighth year. Jones and Crocker[6] formulate the following for the computation of lymphocyte values in children: Multiply the year of age by 3 and subtract from 55. Thus, at six years of age there should be 55—(6x3) or 37.

Lymphopenia (decrease of lymphocytes) is secondary to neutrophilia and accompanies leukocytic leukemia.

Eosinophilia, the absolute increase of the eosinophilic leukocyte, characterizes:

1. Infestations with parasites as trichinosis or uncinariasis.
2. Allergic states as bronchial asthma, hayfever, or urticaria.
3. Skin diseases as scarlet fever, scabies, psoriasis, or pemphigus.
4. Myelogenous leukemia, Hodgkin's disease.
5. In tuberculin reactions.

This variety of leukocyte has a normal incidence of 1-4 per cent; a rise of 6-7 to 20-30 constitutes usual pathology but occasionally instances of extreme increases to 80 per cent and over have occurred. It has been called the most sensitive of the leukocytes and is remarkable as a prognostic aid. Simon emphasizes[7] "—their return in conditions in which they have previously been absent or diminished is a good omen". Its response to acute infection is notable in that it declines in or disappears from the circulation (eosinopenia) during the upgrade of the process (Simon's septic factor), and awakens at the "dawn of convalescence phase". Illustration: total leukocytes, 8,000 with 34 per cent eosinophiles.

Leukocytoses of the monocytic group, embracing cells of the endothelial, large mononuclear and transitional classification, are not so conclusive as diagnostic aids. In the circulation these cells are active scavengers and prompted the designation "macrophages" from Metchnikoff in his theory of immunity. They are common to typhoid fever, active tuberculosis and endocarditis, and the active stages of protozoan infection. A sudden increase (monocytosis) inaugurates the swing of the shift from left to right in acute infections, following the monocytopenia (decrease) or absence of monocytes which marks the upgrade of infection.

Basophilia or basophilic leukocytosis is the least helpful of the leukocytoses; it is found in myelocytic leukemia. Basopenia approximates eosinopenia and monocytopenia.

Our knowledge of leukocytic behavior has accumulated markedly since the dawn of the present century; the neutrophiles have furnished the bulk

of study and their reaction to infection has been stressed. In 1905 Sondern[8] and a year later, Gibson[9] established that the neutrophilic percentage tended as an insight into the character of an infection; that the degree of leukocytosis spelled the body or host response, and that their proportionate relationship suggested an index of resistance, an important aid to diagnosis and prognosis.

Though somewhat clarified of cumbersomeness by Wilson[10], it was not until 1919 that Walker[11] promulgated his "polymorphonuclear index" as the formula T-(P-60) in which T represents the thousands of the total white cell count, P. the neutrophile per cent, and 60 a numeral arrived at by mathematical computation,—thus our case showed 20.000 leukocytes and 85 per cent neutrophiles, or 20-(85-60) or 5, a plus index of fair omen. In 1927, Jones and Crocker[12] advanced their "lymphocytic index" which parallels Walker's index closely but is more useful in that it includes lymphocytic variations and chronic inflammations. Accepting 20 as the lowest normal lymphocyte percentage, for every drop of 1 per cent of lymphocytes in the differential below this figure there should be a rise of 1,000 in the total count; thus in our above case there were 15 per cent lymphocytes (a fall of 5) and the total count should have been 15,000; since it was 20,000, the index was plus 5. Shadowed by the brilliancy of today's appreciation of cell morphology, indices of resistance of this type have wavered in interest; doubtless they will be revived and more careful consideration will be conceded them.

With Arneth in 1904, there began a system of study based on neutrophile nuclear structure and development which evolved to our present conceptions. Credit for popularizing this work is due to Victor Schilling for it was his 1911 treatise which opened to the world a hematologic technic which has yielded much; it has placed in our hands a simple and usable mirror which reflects the biologic reactions of the body to acute infection.

The Schilling technic divides neutrophiles into four sequential classes[13] in the order of their development, nuclear morphology being the differential characteristic. It delineates a usual circulatory PMN hemogram as:

Myelocytes	Juveniles	Stabs (Rhabdocytes)	Segmenters (Lobocytes)
0	0—1	3—5	58—66

Infection recruits the younger forms. A fictitious separation is imagined between the stabs and the segmenters; a flux of young forms to the left constitutes a left shift, and of mature forms to the right, a right shift. Stab cells (the degenerative blood picture) on the increase denote the start or advance of infection, and juvenile cells appearing and increasing (the regenerative blood picture) indicate bone-marrow stimulation or resistance, and the "battle phase" is on. Progress of the "shift" in either direction implies the status of the battlers.

Coincident to the rise of the neutrophiles is a fall of other leukocytic elements: The lymphocytes, monocytes, eosinophiles and basophiles recede in or leave the circulation until resistance has been overcome. Should the invasion be extinguished, the lymphocytes assume the upgrade and the "phase of cure" is apparent as the neutrophilia subsists. Occurring prior to any right shifting, a sudden shower of monocytes, the "phase of defense", is evident, and the recessed eosinophiles "perk", heralding the "dawn of convalescence".

An ordinary infection[14] is implied by 15,000 or more leukocytes showing a 1:2 immature to mature PMN ratio (Schilling index of 1/2) and a decline of other leukocyte varieties. A good prognosis is indicated by a declining total count (below 15,000), by an immature to mature ratio of 1:5 PMNs, an increasing lymphocyte percentage, 2 or 3 eosinophiles, and disappearing "toxic neutrophiles". A severe infection with a poor prognosis is suggested by a persistent "left shift" with a total count of 30,000 and 90 per cent neutrophiles (95 per cent neutrophiles is said to be the limit of recovery), a fall of lymphocytes to less than 10 per cent, a 1 plus: 1 immature: mature cell ratio, many toxic granule laden neutrophiles and absence of eosinophiles. Impending death is foretold by a flooding of the circulation with myeloid elements.

Modernly, as Gradwohld expresses it[15]: "Hematology has come into its own and must be used with more understanding and intelligence than has been the case in the past." Medical and surgical diagnosis and procedure, and even, prognosis has been cleared of conjecture and been given immeasurable support.

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FRENCH HOSPITAL

A regular meeting of the French Hospital staff was called to order on September 17, 1937, with Dr. J. B. Gooch presiding, in the absence of Dr. R. L. Gordon.

The scientific program, which consisted of a symposium on pulmonary tuberculosis, was then presented. Dr. L. A. Monte presented the medical aspect of this disease, stating that early diagnosis should be emphasized and that one should be tuberculosis conscious. Early symptoms are often considered trivial or due to other causes. Diagnostic signs are roentgen ray evidence, hemoptyses, and pleurisy. The early symptoms of tuberculosis are fatigue and coughing; night sweats and fever occur in advanced stages; hoarseness and unexplained aphonia should be considered suggestive of tuberculosis. Gastrointestinal symptoms occur rather late in the disease. The early findings are usually above the level of the third rib anteriorly or fourth dorsal posteriorly. The diagnosis, on physical signs, is 25 per cent accurate in early stages. Treatment should consist of: (1) Rest, food and fresh air; (2) collapse therapy.

Dr. F. F. Boyce opened his paper on the surgical aspect stating that surgical treatment is the most important surgical advance of the century. Surgery aims at collapse and immobilization. Unilateral lesion is the best indication for surgery. In the operative series, the first (1) is on the phrenic nerve, paralyzing the diaphragm. This is the method of choice, if pneumothorax is not efficacious.

(2). Scalemotomy, gives about 25 per cent efficiency in apical lesions or severe bilateral lesions.

(3). Extra pleural pneumolysis is rather dangerous if over thin walled cavity.

(4). Thoracoplasty divides adhesions when pneumothorax is not feasible because of adherence to parietal pleura. Supposed to be of benefit in about 66 per cent of patients operated on.

(5). Extra pleural thoracoplasty, in most early operations, failed in not being extensive enough to secure complete collapse. These operations carried great shock.

At present operation is done in stages, taking two or three ribs at a time. The periosteum is treated with 10 per cent formalin to prevent regeneration (Alexander). The upper ribs are resected first, because stages can be stopped at any time. The inferior angle of the scapula is removed to allow it to fall in. The Trendelenberg position is used postoperatively, to prevent gravitation of fluid to lower part of chest cavity. This is indicated when other measures fail and if the lesion is unilateral and if the patient is between 15 and 45 years of age and a good operative risk.

The contraindications are: Bilateral lesion; low vital capacity, under 100 c.c.; cardiac or renal disease. A secondary thoracoplasty is usually needless because of the nature of the cavity.

The pathologic aspect was next presented by Dr. W. H. Harris, which consisted of lantern slide demonstration of various lesions of childhood and adult tuberculosis from early to cavitation stage and differential aspects from syphilis of lung.

Dr. L. J. Menville closed the program with the roentgen ray aspect, showing a chart by Lawrason Brown with relative importance of physical laboratory and roentgen ray signs and roentgen ray plates showing the various lesions.

R. E. Rougelot, M. D., Sec.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

OCTOBER 4 Board of Directors, The Orleans Parish Medical Society, 8. p. m.

OCTOBER 5 Eye, Ear, Nose and Throat Staff, 8 p. m.

OCTOBER 5 Pathologic Conference, Hotel Dieu, 8:15 p. m.

OCTOBER 6 Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

OCTOBER 6 Mercy Hospital Staff, 8 p. m.

OCTOBER 6 Tulane Medical Clinic Staff, 8 p. m.

OCTOBER 8 French Hospital Staff, 8 p. m.

OCTOBER 11 ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

OCTOBER 13 Touro Infirmary Staff, 8 p. m.

OCTOBER 15 I. C. R. R. Hospital Staff, 12 Noon.

OCTOBER 18 Hotel Dieu Staff, 8 p. m.

OCTOBER 19 Charity Hospital Medical Staff, 8 p. m.

OCTOBER 20 Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

OCTOBER 20 Charity Hospital Surgical Staff, 8 p. m.

OCTOBER 21 Eye, Ear, Nose and Throat Club, 8 p. m.

OCTOBER 25 ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

OCTOBER 26 Baptist Hospital Staff, 8 p. m.

OCTOBER 27 Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

TUBERCULOSIS INSTITUTE

On Monday and Tuesday November 22-23 there will be held a Tuberculosis Institute at the Hutchinson Memorial Building under the auspices of the Tuberculosis Committee of New Orleans, the Orleans Parish Medical Society and the Louisiana State Tuberculosis Association. This Institute will be conducted by Dr. Fred H. Heise of Trudeau, New York, and Dr. John B. Hawes of Boston. In the afternoon there will be clinical demonstrations. In the evening Dr. Heise and Dr. Hawes will talk each night on the diagnosis and on the treatment of tuberculosis. Each man will talk about an hour. On the second evening opportunity will be given for questioning the speakers.

Dr. Heise is the Medical Director of Trudeau Sanitarium, which position he has held since 1929. He is Chairman of the Diagnostic Standards Committee of the National Tuberculosis Association and is a member of the Research Committee of this same organization. He has served as Director and has been President of the American Sanitorium Association. At the present time he is President of the Saranac Lake Medical Society. Dr. Heise has been a prolific contributor to the literature on tuberculosis. He has written some 76 papers on this subject, indicative of his activity in the study of the disease. His book, "One Thousand Questions and Answers on Tuberculosis," is used throughout the country. Dr. Heise is unquestionably one of the outstanding phthisiologists in the country and his presence in New Orleans should be a great stimulus to tuberculosis activities in the city and state.

Dr. John B. Hawes was formerly Director of the Clinic for Pulmonary Diseases at the Massachusetts General Hospital and on the staff of the Harvard University Medical School. He is now Director of the Rutland Sanatorium and consultant in diseases of the lung at the U. S. Veterans' Bureau. Dr. Hawes has been a busy writer on diseases of the chest. His writing is not confined only to scientific monographs on tuberculosis and pulmonary diseases but the small books he has written for the laity have been extensively used. "You and the Doctor," published in 1929, was extremely well received. "Talks on Tuberculosis," 1931, has just been revised and a new edition has recently appeared, indicating its popularity. In addition to his primary interest in tuberculosis, Dr. Hawes is one of the outstanding public spirited men of Boston, where he has accomplished much in the social and medical problems of that community.

The opportunity of hearing these men should appeal to not only those primarily interested in tuberculosis and internal medicine but also to the men who are thrown into contact from time to time with tuberculous patients and yet do not have the opportunity of keeping abreast of what is going on in tuberculosis work. Dr. Heise and Dr. Hawes can be depended upon to give the latest information concerning the diagnosis of this disease and the modern methods of treatment which have been so extensively modified in the last few years through surgical approaches to the problem of the care and cure of a tuberculous person.

NEWS ITEMS

Dr. Amedee Granger attended the Fifth International Congress of Radiology in Chicago, September 12-17, 1937. At this meeting there was an exhibit of his work on the sphenoid and mastoid. Doctor Granger also served as a member of the Committee for the Reception of Foreign Guests.

Dr. M. Lyon Stadiem delivered a paper before the American Congress of Physical Therapy in Cincinnati on September twenty-first.

We regret to report the loss by death of two of our Active Members: Drs. I. I. Lemann and Leopold Mitchell.

Dr. C. C. Bass recently received an honorary doctor's degree from Duke University, having been cited for his work as Professor of Experimental Medicine, Director of the Laboratory of Clinical Medicine, and as Dean of the Tulane Medical School.

SOUTHERN MEDICAL NEWS

Plans for the Southern Medical Convention are rapidly maturing, and the attention of the membership is called to the following matters:

The Scientific Exhibits Committee is anxious to receive all requests for exhibit space not later than October 10.

The Membership Committee will very shortly canvass the profession of the city and state with the purpose of increasing the membership in the Southern Medical Association. This, the second largest medical organization in the United States, offers to its membership an annual meeting of unusual scientific merit and a medical journal which ranks among the best.

As the financing of this convention is a direct obligation of every member of the Society, the Budget Committee has settled upon an amount sufficient to take care of the absolute needs of this meeting. Members of the Society will very

shortly be asked to make individual contributions of a nominal sum. The per capita will be evenly apportioned and the surplus, if any, remaining after the conclusion of the meeting will be reapportioned to the members of the Society. You are urged to facilitate the work of the Finance Committee by making your contributions as promptly as possible after you have been approached.

The President, Dr. James T. Nix, has appointed the following members of the Society as hosts to the different sections of the Southern Medical Convention:

Section on Medicine—Drs. Randolph Lyons, Jules Myron Davidson, L. C. Chamberlain, Willard R. Wirth, and Howard Russell.

Section on Pediatrics—Drs. Rena Crawford, G. Richarda Williamson, Julian Graubarth, Jack E. Strange, and Roy E. de la Houssaye.

Section on Gastro-Enterology—Drs. H. L. Weinberger, A. L. Levin, Daniel N. Silverman, and Donovan C. Browne.

Section on Pathology—Drs. Andrew V. Friedrichs, Edwin H. Lawson, John A. Lanford, Aldea Maher, and Maurice Couret.

Section on Neurology—Drs. E. McC. Connely, Lucy Scott Hill, H. Randolph Unsworth, Grace Goldsmith, and Geo. F. Roeling.

Section on Radiology—Drs. E. R. Bowie, L. W. Magruder, Leon J. Menville, T. T. Gately, and John C. Rodick.

Section on Dermatology—Drs. J. W. Tedder, M. T. Van Studdiford, James K. Howles, R. A. Oriol, and J. N. Roussel.

Section on Surgery—Drs. Howard R. Mahorner, J. Ross Veal, Frank Chetta, J. T. Brierre, and Edmond Souchon.

Section on Bone and Joint Surgery—Drs. J. T. O'Ferrall, Isidore Cohn, Frank Brostrom, H. Theodore Simon, and Paul A. McIlhenny.

Section on Gynecology—Drs. Curtis H. Tyrone, P. Graffagnino, Marcy J. Lyons, M. M. Hattaway, and Julian Lombard.

Section on Obstetrics—Drs. Thos. Benton Sellers, Walter E. Levy, Katharine Havard, Edward L. King, and Arthur Caire, Jr.

Section on Urology—Drs. Robert F. Sharp, Edgar Burns, H. D. Ogden, R. L. Gordon, and C. L. Peacock.

Section on Railway Surgeons—Drs. Roy B. Harrison, Wm. P. Bradburn, Ralph J. Christman, H. W. Kostmayer, and Chas. F. Gelbke.

Section on Ophthalmology and Otolaryngology—Drs. Chas. A. Bahn, Chas L. Cox, Monte F. Meyer, Spencer B. McNair, and E. Garland Walls.

Section on Public Health—Drs. Wm. H. Seemann, A. E. Fossier, J. M. Batchelor, Jos. A. O'Hara, and J. A. Henderson.

Section on National Malaria Control—Drs. C. C. Bass, Ernest Carroll Faust, and Jos. S. D'Antoni.

Section on Medical Education—Drs. John H. Musser, Rigney D'Aunoy, Henry Laurens, Alton Ochsner, and F. F. Boyce.

Section on American Society of Tropical Medicine—Drs. Chas. F. Craig, Wm. H. Seemann, J. L. Locascio, and C. J. Tripoli.

Section on Anesthesia—Drs. Lily L. Dismuke, C. J. Vedrenne, Ansel Caine, Geo. B. Grant, and Mary R. Niebergall.

Section on Proctology—Drs. J. W. Warren, Maurice Lescale and Warren H. Hebert.

Section on Allergy—Drs. N. K. Edrington and B. G. Efron.

The Arrangements Committee solicits and will need the wholehearted cooperation of the full membership in successfully conducting this convention.

Lucien A. Ledoux, M. D., General Chairman,
Committee of Arrangements.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY NEWS

Announcement is made by the Executive Committee of the following Chairmen and Vice-Chairmen of the various sections of the New Orleans Graduate Medical Assembly:

Dermatology—
Dr. James K. Howles, Chairman.
Dr. M. T. Van Studdiford, Vice-Chairman

Ear, Nose, and Throat—
Dr. Wm. Wagner, Chairman
Dr. H. Ashton Thomas, Vice-Chairman

Gastro-Enterology—
Dr. Daniel N. Silveramn, Chairman

Gynecology—
Dr. Lucien A. LeDoux, Chairman
Dr. John T. Sanders, Vice-Chairman

Medicine—
Dr. Philip H. Jones, Chairman
Dr. Charles F. Craig, Vice-Chairman

Neurology—
Dr. H. Randolph Unsworth, Chairman
Dr. E. McC. Connely, Vice-Chairman

Obstetrics—
Dr. Walter E. Levy, Chairman
Dr. E. L. Zander, Vice-Chairman

Ophthalmology—
Dr. E. E. Allgeyer, Chairman

Orthopedics—
Dr. Paul A. McIlhenny, Chairman
Dr. Geo. C. Battalora, Vice-Chairman

Pathology—
Dr. Geo. H. Hauser, Chairman

Pediatrics—
Dr. Robert A. Strong, Chairman
Dr. Ruth G. Aleman, Vice-Chairman

Radiology—
Dr. Leon J. Menville, Chairman

Surgery—
Dr. Waldemar R. Metz, Chairman
Dr. Howard R. Mahorner, Vice-Chairman
Urology—
Dr. Edgar Burns, Chairman

LIBRARIAN'S REPORT TO BOARD

July, 1937

The Library has loaned to doctors during July, 560 books and journals or more than one to each member of the Society,—a worthy record for a hot summer month. An additional 116 items have been loaned to students, making a total circulation of 676 for the month. These figures do not include the great use of books and journals within the Reading Rooms.

During July, 18 volumes have been added to the Library, all of which were received by binding.

Miss Marshall gave two talks before the members of Le Petit Salon on their summer programs, one on "Plantation Medicine" and the other on the "Diary of a Medical Student, Thomas H. Wade," who attended medical school in New Orleans during the session of 1851-52.

The following doctors were elected to membership:

Active—Drs. Jos. T. Brierre, Emma S. Moss, and A. L. Whitmire.

Associate—Dr. Warren H. Hebert.

Dr. A. N. Lewis transferred from Interne to Associate Membership.

Dr. Hugh Thompson Beacham announces the opening of his offices for the practice of Urology —1110 Pere Marquette Bldg.

DOCTOR WANTED

Excellent location. Jackson, Louisiana.

For full details, communicate with Dr. S. M. Blackshear, New Orleans.

LOUISIANA STATE MEDICAL SOCIETY NEWS

TRI-PARISH MEDICAL SOCIETY

The Tri-Parish Medical Society held its regular monthly meeting at Lake Providence on September seventh. The following were present: Drs. J. P. Davis, President; William K. Evans, G. S. Hopkins and William H. Hamley from East Carroll Parish; Drs. W. McG. Dollerhide, Dan W. Kelly, E. D. Butler from West Carroll; Drs. Joseph Whitaker and T. B. Sparks from Tensas, and Drs. E. O. Edgerton and D. H. Allen from Madison.

Drs. Smith W. Douglas from Eudora, Ark., J. H. Burge from Lake Village, Ark., and Dr. C. G. Leverett from Eudora were guests. Dr. J. H. Burge presented a paper entitled "Infections of the Hands and Feet". This was discussed by Drs. Whitaker, Butler and Burge. Dr. Smith W. Douglas read a paper on "Medical Fads and Fallacies", which was discussed by Drs. Whitaker, Hopkins, Leverett, Edgerton and Douglas.

Dr. D. H. Allen from Tallulah was elected to membership.

The next meeting will be held at Tallulah, Madison Parish, on Tuesday, October fifth.

William H. Hamley, M. D., Sec.

CLINICS AND DEMONSTRATIONS, TULANE UNIVERSITY

During the week beginning November 22, the Medical School of Tulane will put on a week of post-graduate medical instruction to which the medical profession of the state and surrounding states will be invited and, to which the graduates of Tulane will be extended a special welcome. This meeting, to which all medical men will be cordially received, will be a week of post-graduate instruction in medicine, surgery, obstetrics and the specialties. Not only will the faculty of Tulane participate in the lectures and demonstrations but also there will be invited a small group of distinguished teachers from other localities. For example, on Monday and Tuesday evenings there will be an Institute on Tuberculosis which will be conducted by two of the outstanding phthisiologists in this country, Dr. Fred H. Heise and Dr. John B. Hawes. Announcement of this meeting and the qualifications of these two men is recounted elsewhere in this number (p. 231).

In addition to the medical demonstrations and medical aspects of the meeting, outstanding will probably be the dedication of the medical library in honor of our great Dr. Matas on Friday evening, November 26. At this meeting Dr. Matas will speak, in acceptance of the honor and other speakers will also give addresses.

The social aspects of the occasion should not be forgotten. There will be several evening entertainments provided and of course on Saturday, November 27 the annual Louisiana State University-Tulane University football game will be held in the stadium.

It is earnestly hoped that there will be a large attendance of Tulane men. They could come a few days ahead of the Southern Medical and see what is going on here in their old medical school; there will be the opportunity of attending a great football game and then they can stay on a few days longer and listen to the original papers, see the scientific exhibits and participate in the ac-

tivities of the Southern Medical. If a man can afford to spend two weeks away on vacation which will be instructive, pleasurable and enjoyable these two weeks of concentrated medical activity will afford instruction, pleasure and enjoyment.

DEATH OF DOCTOR SIMMONS

Doctor George H. Simmons died on September first at the age of eighty-five. Probably more than any one man, Doctor Simmons is responsible for the present high standing and efficiency of the American Medical Association. In 1899 he became secretary of the organization and editor of its periodicals. In 1901 he became also general manager. Under his inspired leadership, the growth of the Journal became outstanding, and it has, at the present time, the largest circulation of any medical journal in the world. In his incumbency, the Committee on Medical Education and Hospitals was formed in 1905. At the same time the Council on Pharmacy and Chemistry was developed. Many other activities were initiated at this time. In all, Doctor Simmons was really the man who put over the new high aims of the officers and members of the Association. He retired some few years ago.

Doctor Simmons, at the occasional occasions when he was present at the A. M. A., was always acclaimed with enthusiasm in recognition of all he had done and accomplished for organized medicine.

INFECTIOUS DISEASES IN LOUISIANA

Dr. J. A. O'Hara, Epidemiologist for the State of Louisiana, has furnished us with the weekly morbidity reports for the state, which contain the following summarized information. For the week ending August 14, the following diseases were reported in double figures: fifty-three cases of pneumonia, 49 of pulmonary tuberculosis, 43 each of malaria and syphilis, 42 of gonorrhea, 35 of cancer, 17 of typhoid fever, 16 of diphtheria, 14 of whooping cough and 11 of influenza. The typhoid fever cases were scattered throughout the state, no one parish reporting more than two cases during this week. There were reported also 8 cases of poliomyelitis, four of which originated in Caddo and one each in Bienville, Calcasieu, Claiborne and Tangipahoa Parishes. A case of undulant fever was reported from Orleans Parish and one from Terrebonne. For the week ending August 21, pneumonia again led all reported diseases, with 49 cases cited by the doctors of the state. This was followed numerically by 44 cases of syphilis, 42 of pulmonary tuberculosis, 31 of cancer, 23 of gonorrhea, 22 of malaria, 18 of typhoid fever and 10 of diphtheria. The typhoid fever cases were again scattered throughout the state, with Winn and Orleans Parishes each reporting the largest number, namely 3 cases. Poliomyelitis was reported in the following parishes: Ouachita, 2 cases; Caddo, East Carroll, Pointe Coupee and West Feliciana Parish each one. One case of undulant fever developed in Iberia Parish. For the week ending August 28, the thirty-fourth week of the year, syphilis regained its customary place at the head of the list with 71 cases appearing in the weekly morbidity report. This was followed by 46 cases of malaria and pneumonia, 29 each of tuberculosis and cancer, 24 of gonorrhea, 23 of typhoid fever, 18 of whooping cough and 10 of diphtheria. The typhoid fever was fairly well distributed throughout the state with this exception; Lafayette Parish reported 6 cases. There were only four cases of poliomyelitis reported this week, one each from Bienville, Franklin, Orleans and Webster. Typhus fever made its appearance for the first time in some months with 2 cases reported from East Baton Rouge, and one from Pointe Coupee. For the week ending September 4, there was a very big jump in the number of cases of syphilis and gonorrhea, 152 in the former and 71 in the latter being recorded. These two diseases were followed by 49 cases of tuberculosis, 43 of cancer, 41 of pneumonia, 35 of malaria, 19 of typhoid fever and 16 of whooping cough. Bienville, Caddo and Claiborne Parishes each had 3 cases of typhoid fever; no other parish had more than 2. The cases of poliomyelitis were decreased to 4 this week, one each from Caddo, Madison, Natchitoches and Union. For the thirty-sixth week of the year, ending September 11, there were nearly five times as many cases of syphilis as any other disease. The following diseases then followed in double figures: forty-four cases of pneumonia, 33 of malaria, 31 of tuberculosis, 21 of gonorrhea, 19 of typhoid fever and 16 of cancer. No parish reported more than 2 cases of typhoid fever except Acadia which had 3. Seven cases of poliomyelitis were reported this week, one each from Beauregard, Bossier, Ouachita and Tensas, and 3 from Orleans. One of the cases from Orleans was imported.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of Census, reports that for the week ending August 14, there were 141 deaths in the city, divided 86 white and 55 negro. Fifteen of these deaths were in infants under one year of age. The following week, ending August 21, there was a drop of eleven deaths in the city, 130, of whom 71 were white and 59 negro. Sixteen of these deaths were in children under one year of age. For the week ending August 28, there was a total of 140 people dying in New Orleans; of these, 85 were in the white and 55 in the negro population. The infant mortality was unchanged from that of the previous

week. For the week of September 4, there was a big rise, largely due to 106 deaths in the white population, whereas the negro population had but 64, making a total of 170 for the two races. It is rather interesting that only 10 of these deaths were in small infants.

CORRESPONDENCE

The New Orleans Medical and Surgical Journal,
New Orleans, La.

On page 159, September number, I read: "Dr. Dyer was the first to administer chaulmoogra oil to the lepers." The writer recalls Dr. Samuel Logan, in the Charity Hospital, in diagnosing a case as leprosy, pull some of the toes and fingers, throw them into a receptacle to be burned and prescribe chaulmoogra oil. This was in the winter of 1888-1889. Dr. Isadore Dyer was not then a physician.

George F. Powell, M. D.,
Tulane, 1889.

Dr. P. T. Talbot, Secretary,
Louisiana State Medical Society.
Dear Doctor:

To assist in bringing before the public the effort being made to eradicate syphilis, there has been prepared a set of six educational posters. It is believed these posters will be of assistance to physicians who wish to take part in this activity. These posters, if desired, may be obtained from the Superintendent of Documents, Washington, D. C., at 75c per set. It will be appreciated if you will bring this matter to the attention of the members of your State Medical Association through your journal or in any other effective way.

R. A. Vonderlehr,
Assistant Surgeon General,
Division of Veneral Diseases.

Editor, New Orleans Medical & Surgical Journal
New Orleans, Louisiana.
Dear Sir:

Enclosed you will find a copy of a letter written to the Director of the United States Civil Service Commission and the United States Post Office Department.

Very truly yours,
F. U. Darby, M. D.

Baton Rouge, Louisiana
September 18, 1937

Director, U. S. Civil Service Commission
Washington, D. C.
Dear Sir:

I am a duly qualified and licensed M. D. in active practice in the City of Baton Rouge, Louisiana.

On the morning of September 17, 1937, I was called to the local post office to attend a carrier who had fainted and, in falling, had injured his head. He was removed to his home by ambulance and I followed, rendering treatment upon his arrival. Calling upon him at 12:30 p. m. of the same date, I was informed by the family that the local acting Postmaster, Mr. Brown, had called by phone stating that the injured party would have to be treated by a so-called government designated doctor, and that I be so informed.

He further stated that the emergency treatment which I had rendered would be taken care of by the government, but that future treatment would have to be made by the so-called acceptable government physician.

In addition, he stated that if I continued the case, payment would be withheld for my services. I know of no law in this country that makes it mandatory that any individual, federal employees not excepted, accept treatment from any designated physician or group of physicians.

It has always been the inalienable right of any injured or ill individual to secure the services of any physician he so desired and it will continue to be the case until we have statutory Federal control of medicine.

If the government has instituted such a policy in regard to its employees, it has failed to come to the attention of the writer and to say the least, if such is the policy of the commission, it is of the lowest type of discrimination against the majority of private practitioners. I understand fully that the Civil Service Commission has the right to designate individual doctors as examiners for candidates, but I cannot accept the apparent fact that they may also designate who shall treat the injured or sick.

If Mr. Brown's action in this matter is upheld by the commission or the post office department, federal control of medicine is definitely here and the medical profession had best accept it in good grace, as I shall, but if on the other hand his action is without authority or precedent, it is my intention to hold him fully accountable.

It has never been my intention to allow my services to be limited to emergency treatment for federal employees or anyone else, except at the explicit direction of the patient himself.

I desire that the matter be fully investigated and that I be informed as to whether this state of affairs is purely a matter of local favoritism or a definite federal policy, that I may intelligently govern my actions in the future.

Very truly yours,
F. U. Darby, M. D.

EXAMINATIONS: AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next examinations (written and review of case histories) for Group B candidates will be held in various cities of the United States and Canada on Saturday, November 6, 1937, and Saturday, February 5, 1938. Application for admis-

sion to these examinations must be filed on an official application form in the office of the Secretary at least sixty days prior to these dates.

The general oral, clinical and pathological examinations for all candidates (Group A and B) will be conducted by the entire Board, meeting in San Francisco, California, on June 13, and 14, 1938, immediately prior to the meeting of the American Medical Association.

For further information and application blanks address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsbugh, (6), Pa.

ANNOUNCEMENTS OF MEETINGS

The fourth annual meeting of the Southeastern Branch Society of the American Urological Association is to be held November 5-6 in Birmingham, Ala., with headquarters at the Tutwiler Hotel.

The New Orleans Gynecological and Obstetrical Society will present before the Orleans Parish Medical Society on October 25, 1937, a program on the cesarean section. Twelve papers and one motion picture will be presented, covering thirteen points in regard to the cesarean section: for example, historical sketch, indications for use, preoperative and postoperative care, and a summary of a ten years' survey of the section in New Orleans. The speakers will be members of the New Orleans Gynecological and Ostetrical Society, with the exception of Dr. Ansel M. Caine, who will present a paper on anesthesia. Each speaker will be limited to a maximum of ten minutes, and some of the papers will cover five minutes or less.

For the first time a program of this type is being attempted. The New Orleans Gynecological and Obstetrical Society and the Orleans Medical Society wish to extend to local physicians and those throughout the state a cordial invitation to attend this meeting, on October 25 in the auditorium of the Hutchinson Memorial Building, 1430 Tulane Avenue.

GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OF MEDICINE

The two weeks' period devoted to the study of some aspects of medicine under the leadership of the New York Academy of Medicine will this year be held from November 1-12, 1937. Medical and surgical disorders of the urinary tract will be the subject, and will be presented from a clinical, experimental, physiological and surgical viewpoint. The distinguished group of speakers, local men and men imported from medical centers throughout the world, are prepared to present their subjects. The evening sessions will be held at the Academy of Medicine; the clinical programs in the various hospitals of New York City.

Information regarding this meeting may be obtained from the Headquarters of the New York Academy of Medicine, 2 East 103rd Street, New York City.

PAN AMERICAN MEDICAL ASSOCIATION

The Seventh Cruise Congress of the Pan American Medical Association is to be held in the form of a cruise to Cuba and the West Indies. The SS "Queen of Bermuda" has been chartered for this purpose and will leave from New York on Saturday, January 15 at 6:30 p. m. There will be a five day stop in Havana, where the Hotel National will serve as headquarters for the scientific sessions. Other ports of call will be Port-au-Prince, Haiti, Trujillo City, Santo Domingo, and San Juan, Puerto Rico. The liner will dock again in New York in the early morning of Monday, January 31.

Among the distinguished medical men who have promised to give addresses at the scientific sessions are: Drs. William D. Haggard, Chevalier Jackson, Fred H. Albee, W. Wayne Babcock, Hugh H. Young and Lewellys F. Barker.

Information regarding the Cruise Congress may be obtained from Dr. Joseph J. Eller, Director General, at the Executive Offices in 745 Fifth Avenue, New York City.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

The Pacific Fleet will be in the port of Los Angeles during the Convention of the Association of Military Surgeons on October 14-16, 1937 at the Ambassador Hotel. An unusually interesting program has been prepared and the Scientific and Technical Exhibits will be the largest in the history of the organization. Physicians, surgeons, dentists and veterinarians of the Army, Navy, Marine Corps, C. C. C. Camps and the Veterans Administration will be present. For additional information write to Robert L. Lewin, Ambassador Hotel, Los Angeles, California.

AMERICAN COLLEGE OF SURGEONS

The Twenty-seventh Annual Clinical Congress of the American College of Surgeons will be held in Chicago, October 25-29, with headquarters at the Stevens Hotel. The usual program will be carried out, presenting addresses by distinguished foreign representatives. The annual oration on surgery will be delivered by J. P. Lockhart-Mummery, M. B., B. Ch., Fellow of the Royal College of Surgeons, London. Other foreign representatives include Professor Rosenthal, Leipzig; Professor Brebner, Johannesburg; Dr. Girdwood, Johannesburg; Dr. Van Tienhoven, Maracaiblo, Venezuela.

SOUTHERN PSYCHIATRIC ASSOCIATION MEETING

The following is a preliminary list of speakers who will participate in the meeting of the Southern Psychiartic Association to be held in San Antonio,

October eighth and ninth, at the Gunther Hotel: Dr. C. C. Burlingame, Psychiatrist-in-Chief, The Neuropsychiatric Institute of Hartford Retreat, Hartford, Conn.; Dr. Philip Smith, Chief Medical Inspector, Department of Mental Hygiene, New York; Dr. Samuel Hamilton, Director, Division on Hospital Service, The National Committee for Mental Hygiene, White Plains, N. Y.; Dr. George T. Harding, Director of the Harding Sanitarium, Columbus, Ohio; Dr. Isham Kimball, Director, U. S. Veterans' Hospital, Lexington, Ky.; Dr. Giles W. Day, Director, Galveston Psychopathic Hospital, Galveston, Texas; Dr. Walter J. Otis, Psychiatrist-in-Chief, De Paul Sanitarium, New Orleans, Louisiana; Dr. Guy Witt, Professor of Psychiatry, Baylor University, Dallas, Texas; Dr. W. C. McConnell, St. Petersburg, Fla.; Dr. Henry L. Poer, Director Thyroid Clinic, Municipal Hospital, Atlanta, Ga.; Dr. Raymond S. Crispell, Clinical Professor of Neuropsychiatry, Duke University, Durham, N. C.; Dr. George R. Herrmann, Clinical Professor Medicine, University of Texas, Galveston Texas; Dr. Wm. D. Partlow, Supt. Ala. State Hospitals, Tuscaloosa, Ala.; Dr. Newdigate M. Owensby, Director Owensby Neuropsychiatric Clinic, Professor Psychiatry, University of Georgia Medical School, Atlanta, Ga.

WOMAN'S AUXILIARY

Louisiana State Medical Society

President—Mrs. George D. Feldner, New Orleans.

President-Elect—Mrs. Frederick G. Ellis, Shreveport.

First Vice-President—Mrs. Joseph P. Brown, Monroe.

Second Vice-President—Mrs. Walter Moss, Lake Charles.

Third Vice-President—Mrs. Robert Bernhard, New Orleans.

Fourth Vice-President—Mrs. E. A. Campbell, Homer.

Recording Secretary—Mrs. William B. Heidorn, Shreveport.

Corresponding Secretary—Mrs. Aynaud F. Hebert, New Orleans.

Treasurer—Mrs. Cassius L. Peacock, New Orleans.

Parliamentarian—Mrs. John T. Crebbin, Shreveport.

LETTER FROM OUR PRESIDENT, MRS. GEORGE D. FELDNER

Dear Auxiliary Members: The coming of October means renewed activity in our auxiliary and a continuance of the very splendid projects that have heretofore been accomplished through the keen interest and loyal cooperation of each member of the Woman's Auxiliary to the Louisiana State Medical Society which I hope will grow ever more steadfast.

It is with a great deal of pleasure that I welcome into our midst, the four new auxiliaries that have already been organized since April of this year, namely:—

Tri-Parish, Tallulah, La., Mrs. E. O. Edgerton, President.

Terrebonne, Houma, La., Mrs. J. B. Duval, President.

Lafayette, Lafayette, La., Mrs. R. D. Voorhies, President.

St. Mary, Franklin, La., Mrs. Chas. M. Horton, President.

New auxiliaries are the best proof of our worth to the medical profession, for only through unity and co-operation can we be of genuine service and thereby attain the end for which we are striving—the approval and support of every doctor, and the doctor's wife as an active and interested member of our auxiliary.

The letter appearing in the September issue of the Journal from Dr. Charles M. Horton, President of the Louisiana State Medical Society, and that of Dr. Joseph O'Hara, President-Elect of the State Society, appearing in this issue, are indeed very inspiring with their wholehearted warmth of approval. Such support is an incentive for us to do bigger and better things when we realize that there is a definite place for us along side the medical profession.

The State Medical Society has always cooperated with us in every way and they have been most generous in allocating space in the Journal for our auxiliary news. Our relations have been most enjoyable and we are very grateful to Dr. John H. Musser, Editor-in-Chief, and Dr. Paul T. Talbot, General Manager, for their many courtesies extended us, and who have aided us whenever called upon.

It is only through the pages of the New Orleans Medical and Surgical Journal that each auxiliary and each member can be advised of the progress being made in our work, and I cannot stress too urgently the importance of your reading this column each month so that you can familiarize yourself with the various activities.

Mrs. Lucian W. Alexander is our very capable Publicity Chairman and she will appreciate receiving from you any items of interest and news from your particular locality, for only by using this space accorded us each month, can we show our appreciation to the State Society.

You will note at the beginning of this column, the names of our elective officers: following, are the names of our Chairmen of Standing Committees and Councilors:—

CHAIRMEN OF STANDING COMMITTEES

Archives—Mrs. S. Chaille Jamison, 1524 Seventh St., New Orleans.

Doctor's Day—Mrs. A. L. Levin, 3725 Napoleon Ave., New Orleans.

Exhibits—Mrs. E. O. Edgerton, Tallulah, La.

Finance—Mrs. Clarence B. Erickson, 423 Herndon, Shreveport, La.

Historian—Mrs. W. P. Gardiner, 2315 So. Carrollton Ave., New Orleans.

Hygeia—Mrs. W. H. Hamley, Lake Providence, La.

Indigent Physicians' Fund—Mrs. Claude A. Martin, Welsh, La.

Legislation—Mrs. Armand G. McHenry, 1810 Riverside, Monroe, La.

Organization—Mrs. C. Grenes Cole, 1422 Bordeaux St., New Orleans.

Press and Publicity—Mrs. Lucian W. Alexander, 1472 Arabella St., New Orleans, La.

Printing—Mrs. Roy B. Harrison, 2327 Napoleon Ave., New Orleans.

Program—Mrs. W. P. Bordelon, 1516 Kirkman St., Lake Charles, La.

Public Relations—Mrs. DeWitt T. Milam, 1704 Island Dr., Monroe, La.

Revisions—Mrs. John L. Scales, 2782 Fairfield, Shreveport, La.

COUNCILORS

1st Congressional District—Mrs. Anees Mogabgab, 3200 Versailles Blvd., New Orleans, La.

2nd Congressional District—Mrs. D. Rogers Brewster, 7918 Freret St., New Orleans, La.

3rd Congressional District—Mrs. C. M. Horton, 305 Iberia St., Franklin, La.

4th Congressional District—Mrs. C. E. Rew, 1337 Oakland Street, Shreveport, La.

5th Congressional District—Mrs. Courtland P. Gray, 115 Louisville Ave., Monroe, La.

6th Congressional District—Mrs. Roy Carl Young, Covington, La.

7th Congressional District—Mrs. G. W. Remage, Jennings, La.

8th Congressional District—Mrs. J. Aubrey White, 2613 Vance St., Alexandria, La.

I urge your staunch and earnest support to these committees who already have launched their programs and from whom you will hear from time to time.

Elsewhere in these pages, you will find a list of all parish auxiliary officers to date.

In the August issue of the Journal appeared our projects for the year 1937-38 which have the hearty approval of the Advisory Council of the State Society. An informed member is an asset to her auxiliary, so familiarize yourself thoroughly with the aims and purposes of your local and state auxiliary and serve wherever possible to further the objectives of our organization.

The Southern Medical Auxiliary meets in New Orleans November 30-December 3, 1937. From whispers heard here and there, this tends to be a very interesting and entertaining meeting and a very large attendance is looked for. And as you all know, the annual State meeting will also be held in New Orleans next year—April 25-27, 1938, and Mrs. S. Chaille Jamison has been appointed General Chairman. While April sounds far off at this time, it is not too soon to begin planning for this meeting and Mrs. Jamison has already formulated plans for a very interesting program. I am sure you will all want to partake of the very cordial hospitality that awaits you in New Orleans, so plan now to attend these two meetings.

May I ask the continued loyalty and interest of each member which will enable us to keep our auxiliary in the forefront to enjoy the position among organizations that it now does?

To each of you I extend cordial good wishes and trust that you will have a very enthusiastic and successful auxiliary year.

Sincerely,
Alma W. Feldner, President.
Woman's Auxiliary
Louisiana State Medical Society.

NAMES OF PARISH AUXILIARIES AND OFFICERS

Caddo Parish
Shreveport
Organized 1928
Meets second Wednesday

President—Mrs. John T. Crebbin, 1133 Kingshighway.

Pres.-Elect—Mrs. C. E. Rew, 1337 Oakland.

1st Vice-President—Mrs. William B. Heidorn, 572 Unadilla.

2nd Vice-President—Mrs. T. J. Bush, 582 Oneonta.

Recording Secretary—Mrs. C. B. Erickson, 423 Herndon.

Corresponding Secretary—Mrs. W. B. Butler, 926 Delaware.

Treasurer—Mrs. O. C. Rigby, 816 Oneonta.

Parliamentarian—Mrs. R. T. Lucas, 535 Pierremont.

Publicity Secretary—Mrs. John L. Scales, 2783 Fairfield.

Orleans Parish
New Orleans
Organized 1929
Meets second Wednesday

President—Mrs. Jules Myron Davidson, 10 Trianon Plaza.

Pres.-Elect—Mrs. C. Grenes Cole, 1422 Bordeaux St.

1st Vice-President—Mrs. E. E. Allgeyer, 1139 Nashville Ave.

2nd Vice-President—Mrs. A. J. Hockett, 2236 St. Chas. Ave.

3rd Vice-President—Mrs. Theodore Simon, 2502 S. Carrollton Ave.

4th Vice-President—Mrs. H. Vernon Sims, 7737 Belfast St.

Recording Secretary—Mrs. Willard R. Wirth, 2523 Octavia St.

Corresponding Secretary—Mrs. Charles L. Brown, 27 Neron Place.

Treasurer—Mrs. John S. Dunn, 8410 Pontchartrain Blvd.

Parliamentarian—Mrs. Anees Mogabgab, 3300 Versailles Blvd.

Historian—Mrs. Jonas W. Rosenthal, 5355 St. Chas. Ave.

Publicity Chairman—Mrs. S. M. Blackshear, 2306 Camp St.

Calcasieu Parish
Lake Charles
Organized 1930
Meets third Friday

President—Mrs. G. C. McKinney, 924 Broad St.

Pres.-Elect—Mrs. Walter Moss, 511 Hodges St.

1st Vice-President—Mrs. E. L. Clement, 910 Pujo St.

2nd Vice-President—Mrs. Olin Moss, Shell Beach Drive.

Recording Secretary—Mrs. C. V. Hatchette, 105 Alvin St.

Corresponding Secretary—Mrs. W. G. Fisher, 1322 Kirkman St.

Treasurer—Mrs. J. E. Sorrelle, Iowa, La.

Parliamentarian—Mrs. R. B. Marshall, Sulphur, La.

Ouachita Parish
Monroe
Organized 1930
Meets third Wednesday

President—Mrs. A. G. McHenry, 1810 Riverfront.

Pres.-Elect—Mrs. C. U. Johnson, 1213 St. John.

Vice-President—Mrs. D. M. Moore, 1209 Park Avenue.

Recording Secretary—Mrs. Douglas Williams, 1302 No. 2nd.

Corresponding Secretary—Mrs. F. C. Bennett, 301 "K" St.

Treasurer—Mrs. Henson Coon, 204 Mulberry.

Historian and Exhibit—Mrs. B. M. McKoin, Edgewater Garden.

Parliamentarian—Mrs. A. B. Gregory, 406 Auburn.

Publicity Secretary—Mrs. DeWitt T. Milam, 1704 Island Drive.

Jefferson Davis Parish
Jennings
Organized 1934
Meets second Tuesday

President—Mrs. G. W. Remage, Jennings, La.

Vice-President—Mrs. John M. Whitney, Jennings, La.

Secretary—Mrs. R. R. Arceneaux, Welsh, La.

Treasurer—Mrs. J. McClure, Welsh, La.

Tri-Parish
Tallulah
Organized 1937
Meets first Tuesday

President—Mrs. E. O. Edgerton, Tallulah, La.

President-Elect—Mrs. W. H. Hamley, Lake Providence, La.

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Houma
Organized 1937
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Claiborne Parish
Homer-Haynesville, La.
Organized 1935
Meets second Friday

LETTER FROM DR. J. A. O'HARA

As President-Elect of the Louisiana State Medical Society, it is a pleasure to extend congratulations to the Woman's Auxiliary on the understanding interest manifested and the sympathetic cooperation with the parent organization.

I have profound confidence in the vision of women workers in progressive, humanitarian movements and have always felt that the Woman's Auxiliary would prove, as it has, a valuable adjunct to the State Medical Society.

It is my hope that the Auxiliary will continue to keep informed concerning the major objectives of the Society and render the same generous assistance as in the past.

Very sincerely yours,
J. A. O'Hara, M. D.,
President-Elect.

Thank you Dr. O'Hara for your splendid letter, I am sure our Auxiliary members will be delighted with it.

Remember—Publicity Chairmen, I need your help each month to give our Auxiliary members interesting news—so don't forget me.

Mrs. Lucian W. Alexander,
Chairman, Press and Publicity.

BOOK REVIEWS

Snow On Cholera—Being a Reprint of Two Papers: By John Snow, M. D., together with a Biographical Memoir, by B. W. Richardson, M. D., and an Introduction by Wade Hampton Frost, M. D. New York, The Commonwealth Fund, 1936. pp. 250. Price $2.50.

The two papers contained in this volume ("On the Mode of Communication of Cholera" and "On Continuous Molecular Changes") represent Snow's best known works. The first of these is a classic contribution to medical literature and indicates Snow's persistency in attacking his problem. Cholera was raging in England, and no one knew how it was being spread. Snow clearly showed that the disease was found seldom in localities having a pure supply of water but invariably wherever the water supply was contaminated by the fecal discharges of cholera patients. His indictment of the Broad Street pump and of the Southwark and Vauxhall Company as distributing agencies for the cholera-spreading water was so unequivocal that none but the most stubborn could deny it. Even more convincing was his demonstration of cholera-infested areas containing houses where the disease had not appeared because the water supply was from an uncontaminated source.

Working before the dawn of bacteriology and with none of the modern equipment to track his prey, his clinical observations were direct enough to furnish convincing evidence that epidemics could be averted by preventing pollution of the water supply. This paper and its companion ("On Continuous Molecular Changes") should be read by all medical men not only because they are milestones in medical progress, but also because they illustrate the type of reasoning which has contributed greatly to the advancement of the medical sciences.

SYDNEY JACOBS, M. D.

Clinical Roentgenology of the Cardiovascular System: By Huge Roesler, M. D. Springfield and Baltimore, Charles Thomas, 1937. pp. 343. Price $7.50.

This book is a rather comprehensive treatise of the use of the roentgen rays in the study of the cardiovascular system and is the result of the vast clinical and experimental experience of an author who has contributed many valuable papers on this subject. Throughout this work, the author emphasizes the value and the limitations of roentgenology in the diagnosis of cardiovascular diseases. The indications for the employment of the various roentgenological technics are thoroughly discussed.

Chapter I deals with technic and includes a detailed discussion of roentgenological methods, including the latest procedures of kymography and cinematography. In Chapters II through V a rather complete study of the normal cardiovascular system is obtained. The section on measurements is thorough and in considerable detail. An evaluation of the various technics of measurements is of special value to the cardiologist and roentgenologist desiring further information of this important subject.

In Chapter VI, the relationship of clinical examination to anatomy and roentgen findings is considered. The changes in the cardiovascular system associated with conditions of other organs are also included in this section. The remaining eight chapters are devoted to diseases of the cardiovascular system and are written with the author's usual thoroughness and attention to details.

The book is well illustrated by means of reproductions of roentgenograms and diagrams. There is a complete bibliography at the end of each chapter and therefore this work should serve as a valuable reference. This is not the type of book

one may read once and put away as it will be better appreciated each time it is studied.

J. N. ANE, M. D.

Fischerisms: By Howard Fabing and Ray Marr, 2nd ed. Springfield, Charles C. Thomas, 1937. pp. 47.

A booklet of aphorisms, puns and "wise cracks" gleaned from the lectures of Martin H. Fischer, distinguished Professor of Physiology at the University of Cincinnati. The pages, containing slightly over 100 words to a page, are 47 in number. Some of the aphorisms are excellent, some are forced but all of them show the man to be a keen observer of human nature and undoubtedly a stimulating lecturer.

J. H. MUSSER, M. D.

Autonomic Neuro-Effector Systems: By W. B. Cannon and A. Rosenblueth. New York, The Macmillan Company, 1937. pp. 229. Price $4.00.

The book is an inspiration and an encouragement to research workers. The authors warn the reader that what is theory today may be discarded for something still newer tomorrow and faithfully keep their promise to submit the discoveries up to date in the autonomic system. The book is fascinating as well as instructive, the main point stressed is the different method of receiving and transmitting nerve impulse by the two great channels of involuntary nerves. The parasympathetic system elaborates acetylcholine which functions along its nerve path to the special organ under its control. Its action is direct and short lived; while the sympathetic system in addition, acts by chemicals in the blood stream and has a far reaching effect because sympathin and adrenine are not as quickly rendered inert as acetylcholine.

The manufacture of definite chemical compound through nerve impulse is not only proved but followed to its final step. The reviewer is especially interested in this monograph on account of his research with histamin and histidin.

Even if the theories so cleverly and clearly set forth in this book have to cede place to newer conceptions, the authors will lose none of their brilliancy and well deserved fame. The book will always stand as a landmark in the study of the intricate paths of nerve function.

NARCISSE F. THIBERGE, M. D.

Anatomy of the Fetal Pig: By John G. Sinclair, M. S., Ph. D. Ames, Ia., Collegiate Press, Inc. 1936. pp. 80. Price $2.00.

This little book, which is primarily a laboratory manual, deals with the descriptive anatomy of the fetus. The subject matter is covered in detail, and in such a manner as to serve as a valuable guide in fetal pig dissections. As a preparatory study to embryology and fetology in the medical curriculum, it should prove of considerable value.

T. H. OLIPHANT, M. D.

A Classification for Medical Literature: Compiled by Eileen R. Cunningham. 2d. ed. rev. & enl. Nashville, Tenn., Cullom & Ghertner Co., 1937. pp. 204. Price $2.00.

The classification and indexing of medical literature is a subject of importance to the entire medical profession, since only by competent and thorough indexing is the library of the world's medical knowledge made available. It may readily be seen that only a classification dealing exclusively with medicine and its related sciences can give us a workable system by the use of the shortest and simplest symbols, as well as the completeness, only to be attained by knowledge of a special field of knowledge. Such a classification is the one devised by Mrs. Cunningham, Librarian of the Vanderbilt University School of Medicine.

Arrangement of medical books by this system, will cause books on the same subject to stand together, neighbored by books on the subjects related to it. Classification is based on the letters of the alphabet, rather than the decimal system, thereby giving a much smaller grouping by even one letter. Subsequent division and subdivision by numeral and letter, group small subjects and even individual treatments adjacently.

The first edition of the Cunningham classification appeared on cards. This second edition in book form, being more compact and less expensive, will be more readily available to new medical libraries to which it should prove most valuable.

An alphabetical index makes the use of the classification simple and quick for ready reference.

MARY LOUISE MARSHALL.

A Laboratory Manual of Physiological Chemistry: By D. Wright Wilson. 3rd Ed. Baltimore, Williams and Wilkins Co., 1937. pp. 288. Price $2.50.

This laboratory manual for elementary students covers the usual material included in similar laboratory guides.

The author is to be commended for keeping the book within a reasonably small size although it is not easy to decide whether the almost total lack of discussion of tests is a proper price to pay for brevity.

One is pleased to see a section of "Dietary Deficiencies" included, but including only two pages, as it does, it can do little more than call attention to the fact that this type of experiment is a true part of a laboratory course in physiological chemistry without furnishing adequate instruction

for a beginner. There is no reference to where further information is to be had.

An error on page 20 ("0.3 c.c." should read "0.03 c.c.") should be so obvious as to confuse only the most thoughtless of students.

References to standard texts and original articles are scarcely adequate. There is a four-place table of logarithms and an adequate index.

Format and arrangement of material are good, and the experiments are clearly presented.

SIDNEY BLISS, Ph. D.

Ophthalmoscopy, Retinoscopy, and Refraction: By W. A. Fisher, M. D., F. A. C. S. Chicago, H. G. Adair Ptg. Co., 1937. pp. 210.

Refraction is unfortunately being more and more neglected within the medical profession. With each year it becomes less and less a medical activity. Only one third of the refracting now done in this country is done by physicians. A simple textbook on refraction is therefore of greater importance from one point of view than a similar volume in other branches of ophthalmology.

The repeated editions of this small work containing some two hundred pages show that the demand does exist among physicians for elementary instruction in refraction and also that few simple practical works on this subject are written by physicians.

Dr. Fisher's book is very elementary even for beginners in ophthalmology. It contains a good deal of useful information and a few technical mistakes. The illustrations are numerous and on the whole good. The outstanding section is on orthoptic training which is written for more advanced readers than the other chapters. The index is reasonably complete. Unfortunately the actual technic of testing is neglected. In my opinion, it should be presented in much greater detail. Medical refractionists especially need to understand better every step in the actual testing of patients for glasses. The lack of this very understanding is one of the reasons why refraction is passing out of medical hands.

For the ophthalmic beginner, this book is apparently worthwhile.

CHAS. A. BAHN, M. D.

Textbook of General Physiology: By T. Cunliffe Barnes, D. Sc. Philadelphia. P. Blakiston's Son & Co., Inc., 1937. pp. 554. Price $5.50.

This volume is based upon a year's course in the general physiology of cold-blooded animals. It is designed for college seniors who have received preliminary training in physics, chemistry and zoology. The author has selected certain subdivisions of the general subject and has been content with emphasis on essentials rather than details. He emphasizes certain problems to illustrate general principles and gives special attention to the subjects of water metabolism and physical models of living systems.

The plan of the book presents first the physical chemistry of living systems; then follows a discussion of external and internal factors which regulate the organism. The first five chapters deal with the physical and chemical principles necessary for even an elementary understanding of general physiology. After a brief consideration of the nature of protoplasm in chapter six, the relation of the organism to the external environment is illustrated by selected problems in cellular permeability and irritability. The transition from the discussion of external to internal factors is made by the study of bioelectrical potentials and temperature characteristics. The last three chapters describe important aspects of the kinetics of the internal environment (oxidation, respiratory pigments, properties of the heart and chemical regulation by hormones).

The method of presentation includes many brief allusions to recent research. This departure from the more conventional pedagogical method is intended to encourage the growing tendency of the modern undergraduates to seek information from original sources. "If the book contributes in any way to the decline of the venerable method of spoon-feeding students with facile generalizations, the author will feel that his labors have not been altogether in vain."

One of the designs of the author has been to prepare a reference book as well as a useful text and, as he himself admits, it contains more than the required work for a particular course. There is a bibliography of approximately one thousand titles. Accompanying the textbook, there is a laboratory manual.

Pre-medical students assimilating such a course as is here represented would certainly be more than ordinarily prepared to undertake the modern problems of medical physiology and physiological chemistry, and to appreciate better their application to clinical medicine.

HENRY LAURENS, Ph. D.

Children Handicapped by Cerebral Palsy: By Elizabeth Evans Lord, Ph. D. New York, The Commonwealth Fund, 1937. pp. 105. 9 illus. Price, $1.25.

This book summarizes Dr. Lord's experience gained from the examination and follow-up of more than 300 cases of cerebral palsy, popularly called birth injury. It facilitates more accurate diagnosis and prognosis of the mental and physical disabilities of children handicapped by cerebral palsy so that the child's special educational needs may be met so far as possible. It aids in recognition both of special abilities and the physiological and psychological difficulties which must be faced

realistically if teachers and parents are to avoid the excessive pressure which would result from ill-founded optimism.

The author discusses the psychological problems in the training, management and guidance of children suffering from birth injuries, and devotes special chapters to the emotional problems of child and parents, and to the teacher's problem. The study was carried on over a period of years sufficient to permit the checking of the results of psychological and physical examinations against the practical criteria of subsequent educational and social outcome.

Dr. Lord has reported in this book the results of many years of painstaking work dealing with the psychological appraisal of cases of cerebral palsy in children attending the muscle training clinics of the Children's Hospital in Boston. She not only observed and tested the children at the clinic, but followed them beyond the boundaries of the hospital to other institutions, to the homes of rich and poor, to public and private schools.

The information which this book contains will be useful to physicians, psychologists, teachers and parents in meeting the problems encountered in the spastic child.

ROBERT A. STRONG, M. D.

Textbook of Pathology: By Sir Robert Muir, M. A., M. D., Sc. D., LL. D., F. R. S. Baltimore, William Wood & Co., 1936. pp. 994. Price $10.00.

This text represents the fourth edition of a well known English textbook of pathology which was first published in August, 1924. It is planned primarily as a teaching text in medical schools, but, since it covers its subject matter so thoroughly, it may well be used as a reference book also. The various discussions and topics are presented in a simple, clear and concise manner for which so many English medical writers are famous. The book in its present edition has been completely modernized, even to the extent, for instance, of including several paragraphs on the uncommon or heretofore imperfectly described tumors of the ovary which were first definitely recognized by Meyer. The text compares with the best American textbooks of pathology.

H. J. SCHATTENBERG, M. D.

Autopsy Diagnosis and Technique: By Otto Saphir, M. D. New York, Paul B. Hoeber, Inc., 1937. Illus. pp. 342. Price $5.00.

This manual was written as an aid to medical students, internes and physicians who may be called upon occasionally to perform an autopsy. The method described is a modification of Rokitansky's and is one wherein the organs are removed en masse and then dissected. Numerous tables are added to give a rapid and clear differential diagnosis between various pathological states. These are exceptionally valuable.

Of course the book was not intended to be a textbook of pathological anatomy. It could be used, however, as a supplement to such a textbook. It is well written, concise, clear and should be of great assistance to men working in a pathological laboratory.

JOSEPH ZISKIND, M. D.

The Endocrines in Obstetrics and Gynecology: By Raphael Kurzrok, M. D. Baltimore, The Williams and Wilkins Co., 1937. pp. 488. Figs. 178. Price $7.50.

Out of the hitherto impenetrable chaos and muddle of nomenclature and experimental contradictions, there has finally emerged a semblance of order. This work of Kurzrok, the text of which the reviewer has conscientiously read from cover to cover, is a very faithful, and extremely successful attempt to present the complexities of endocrinal influence on the male and female sex functions in a clear and consecutive manner.

Though not so stated, the book was probably intended for specialists in the two subjects of the title. Nevertheless, the internist will benefit equally as much, or even more than the gynecologist and obstetrician, because to him usually come first the multitude of female patients suffering, subjectively at least, from numerous complaints, and innumerable variants of one or more ailments. Only too frequently they have their source in some functional or organic disorder of the organs of sex. For this and other reasons the book is a welcome assistant in cases where the doctor puzzles his mind to distraction attempting to classify the symptomatology that presents itself.

Honestly and sincerely, the author has collected and evaluated both the extant experimental and clinical data of others as well as his own, and shown the reader when, where, and how, this information can be applied to the case in hand. He has even gone further. Where the explanation is open to doubt, and this is frequent enough, he sagaciously asks questions himself, and sometimes answers them from the standpoint of the most plausible theory.

There are thirty chapters to the book and quite a bit of the text is devoted to the experimental observations of the author or his associates. They indicate the caliber of the investigator, and exhibit an unusual degree of preserverance and scientific acumen. The suggestion that this or that obscure phase is well worth further investigation, which would doubtless lead to valuable information, indicates an enthusiasm for his subject and a wholehearted willingness to point out leads for other workers, an attitude of mind not very frequently encountered.

The chapters and sections on the chemistry of

the sex hormones are an extremely welcome addition to our understanding of their properties. The sections on functional sterility and the final chapter dealing with laboratory procedures are both exceedingly interesting and helpful.

It is futile to point out for discussion minor defects in diction, laxness or oversight in proof reading, and the rather too frequent use of synonyms. Those who are in any degree familiar with endocrinal nomenclature will not be confused; and, they do not in the least detract from the value of the contents. No single volume specifically dedicated to the subject of sex and the endocrines, in English at least, is known to the reviewer. Kurzrok has placed at our disposal a most valuable and important contribution.

LEONARD C. SCOTT, M. D.

Technic of Local Anesthesia: By Arthur E. Hertzler, A. M., M. D., LL.D., F. A. C. S., 6th ed. St. Louis, Mosby, 1937. pp. 284. Price $5.00.

The plan on which this book is written could only be accomplished by one with vast experience which allows him to select the salient points of local anesthesia and also include his operative technic.

As stated in the preface of the third edition, "Since the planning of the operation is more difficult than the technic of anesthesia, I have endeavored to present the difficulties likely to be encountered in order that the beginner may take stock so as to determine whether or not his experience warrants the undertaking."

Similar to other books on local anesthesia, each chapter describes the technic for different regions of the body. Unlike other texts, the author does not go into detail but touches only the high spots of the subject. The illustrations, of which there are 142, are well selected.

In presenting this sixth edition the author has shown where spinal analgesia has replaced local for operations below the diaphragm.

This book is excellent for one to refresh his knowledge on local anesthesia, but not as a book of reference.

EMIL BLOCH, M. D.

Treatment in Psychiatry: By Oskar Diethelm, M. D. New York, The Macmillan Company, 1936. pp. 476. Price $4.00.

This is a well-prepared and ably-written book of seventeen chapters, preceded by a preface introduction, followed by a well-arranged index, which deals essentially and in toto with treatment in psychiatry. In each chapter is given the treatment indicated in the detailed illnesses. There is a marked psychoanalytic content permeating the leaves. The results of these treatments, when applied intelligently and in the proper hands administered by those capable and thoroughly trained, would no doubt add much to the efficacy of psychotherapy.

This volume should make collateral reading for the general practitioner, likewise a textbook to be used by neuropsychiatrists, especially those dealing with psychoanalysis exclusively.

WALTER J. OTIS, M. D.

PUBLICATIONS RECEIVED

P. Blakiston's Son and Company, Inc., Philadelphia: Recent Advances in Industrial Hygiene and Medicine by T. M. Ling, M. A., B. M. (Oxf.), M. R. C. P. (London). Recent Advances in the Study of Rheumatism by Frederic John Poynton, M. D., F. R. C. P. (Lond.), and Bernard Schlesinger, M. A., M. D. (Camb.), F. R. C. P. (Lond.).

Henry Kimpton, London, England: Protoformotherapy in Treatment and Prevention by Dr. N. E. Ischlondsky.

J. B. Lippincott Company, Philadelphia: International Clinics, Vol. III, Forty-seventh Series, 1937, edited by Louis Hamman, M. D.

The Macmillan Company, New York City: Pediatric Urology by Meredith F. Campbell, M. S., M. D., F. A. C. S., with a section on Bright's Disease in Infancy and Childhood by John D. Lyttle, A. B., M. D. 2 vols.

The C. V. Mosby Company, St. Louis: Psychiatric Nursing by William S. Sadler, M. D., in collaboration with Lena K. Sadler, M. D., and Anna B. Kellogg, R. N.

Navarre Publishing Company, Inc., New York City: The Traffic in Health by Charles Solomon, M. D.

Oxford University Press, New York City: A Textbook of the Practice of Medicine edited by Frederick W. Price, M. D., C. M., F. R. C. P., F. R. S. (Edin.).

The Rockefeller Foundation, New York City: Annual Report of the Rockefeller Foundation for 1937.

W. B. Saunders Company, Philadelphia: Obstetrics for Nurses by Joseph B. DeLee, A. M., M. D., and Mabel C. Carmon, R. N. Eleventh edition.

Charles C. Thomas, Springfield: The Therapeutic Problem in Bowel Obstruction by Owen H. Wangensteen, B. A., M. D., Ph. D. Neurology by Roy R. Grinker, M. D.; second edition. The Postmortem Examination by Sidney Farber, M. D.

William Wood and Company, Baltimore: Operative Obstetrics by J. M. Munro Kerr, LL.D., M. D., F. C. O. G., with the assistance of Donald McIntyre, M. D., F. C. O. G., and D. Fyfe Anderson, M. D.; fourth edition.